by
Manuel Maestre

International Workshop on Functional Analysis
on the Occasion of the 70th Birthday of José Bonet
Universitat Politècnica de València, València (Spain)
June 18th, 2025

José Antonio Vicente Bonet Solves

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AKA Pepe Bonet

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A glimpse on Pepe Bonet's work

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His Academic Background: From High School to Young Postdoc

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• Alexander Humboldt Research Fellowship visiting the universities of Paderborn, Düsseldorf and Eichstätt.

University Positions

- 10/1977-2/1983 Assistant Professor Facultad de Matemáticas, Universidad de Valencia
- 2/1983-1/1987 Associated Professor ETSI Industriales, Universidad Politécnica de Valencia
- 1/1987-31/08/2025 Professor (Catedrático de Universidad) ETS Arquitectura, Universidad Politécnica de Valencia

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- Profesor Emérito por la Junta de Gobierno de la Universidad Politécnica de Valencia en 2025.

Professional Chores I

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- Invited presentations in many, many Universities 1983: Düsseldorf, Dortmund, Eichstaett, Libre de Berlín, Oldenburg, Paderborn, Saarbruecken, Trier (Germany), Gante, Liège (Bélgica), Torino, Lecce, Bari (Italy), Helsinki, Abo (Finland), Kent State University (USA), Zürich (Switzerland), Complutense de Madrid, Autónoma de Madrid, Barcelona, Autónoma de Barcelona, Murcia, Sevilla, La Laguna (Spain), Reading, Oxford, Londres (UK), Cracovia, Poznan, Varsovia (Poland).

Professional chores II

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• First director of Instituto Universitario de Matemática Pura y Aplicada of the Universidad Politécnica de Valencia IUMPA-UPV since May 2004 until the end of November 2016.

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• Pepe has participated as an expert and evaluator in many committees related to research Agencies of Spanish and regional governments. And also for research Agencies from Austria, Germany, Argentina, Belgium, Finland, France, Italy and Check Republic.

Professional chores III

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• Member of Scientific Committees and Editorial Boards of he following Journals:

1. Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales Serie A Matemáticas RACSAM, ISSN: 1578-7353. Since 2001.
2. Functiones et Approximatio, Commentarii Mathematici. Since 2001.
3. Banach Journal of Mathematical Analysis. Since 2017.
4. Matematicki Vesnik. ISSN: 0025-5165. Since 2017.
5. Mediterranean Journal of Mathematics. Since 2019.
6. Rendiconti del Circolo Matematico di Palermo. Since 2022.
7. Journal of Mathematical Analysis and Applications. Since 2012. Chief Editor since 2025.

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3. Banach Journal of Mathematical Analysis. Since 2017.
4. Matematicki Vesnik. ISSN: 0025-5165. Since 2017.
5. Mediterranean Journal of Mathematics. Since 2019.
6. Rendiconti del Circolo Matematico di Palermo. Since 2022.
7. Journal of Mathematical Analysis and Applications. Since 2012. Chief Editor since 2025.

• General editor of the Spanish Royal Society of Mathematics since October 2018 until November 2020.

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- Corresponding member of the la Société Royale des Sciences de Liège (Bélgica) since January 1992.
- Right now Pepe is General Secretary of The Academy of Sciences of Spain since October 2024.

Pepe's Phd Students

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José Bonet Solves

MathSciNet

Ph.D. Universitat de València 1980

Dissertation: *Representación de Espacios de Funciones con Valores Vectoriales*

Mathematics Subject Classification: 46—Functional analysis

Advisor: Manuel Valdivia Ureña

Students:
Click here to see the students ordered by family name.

Name	School	Year	Descendants
Galbis Verdú, Antonio	Universitat de València	1988	6
Melendez, Yolanda	Universidad de Extremadura	1991	
Peris Manguillot, Alfredo	Universitat de València	1992	15
Mangino, Elisabetta	Universitat de València	1997	
Jordá Mora, Enrique	Universitat Politècnica de València	2001	2
Friz Carrillo, Miguel Claudio	Universitat Politècnica de València	2002	
Agethen, Simone	Universität Paderborn	2004	
Conejero Casares, José Alberto	Universitat Politècnica de València	2004	7
Wolf, Elke	Universität Paderborn	2004	
Wegner, Sven-Ake	Universitat Politècnica de València	2010	
Juan-Huguet, Jordi	Universitat Politècnica de València	2011	
Beltrán Meneu, María José	Universitat Politècnica de València	2014	
Ribera Puchades, Juan Miguel	Universitat Politècnica de València	2015	
Zarco García, Ana María	Universitat Politècnica de València	2015	
Rodríguez Arenas, Alberto	Universitat Politècnica de València	2020	
Gómez-Orts, Esther	Universitat Politècnica de València	2022	

Pepe's Phd Students, most of them

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Some of Pepe's Phd Students: Elisabetta

Some of Pepe's Phd Students: Enrique

Some of Pepe's Phd Students: David

Some of Pepe's Phd Students

Scientific work at a glance

Scientific work at a glance

AMERICAN MATHEMATICAL SOCIETY
MATHSCINET
MATHEMATICAL REVIEWS

University de Valencia

Share | Edit Author Profile

Bonet, José

Email:	jbonet@mat.upv.es
Website:	http://jbonet.webs.upv.es/
MR Author ID:	**39165**
Earliest Indexed Publication:	1980
Total Publications:	**261**
Total Related Publications:	**3**
Total Citations:	**3128**

Published as: Bonet Solves, José (2)

- Publications
- Related Publications
- Reviews
- Refine Search
- Co-Authors
- Collaboration Distance
- Mathematics Genealogy Project
- Citations

Co-authors (by number of collaborations)

Agethen, Simone Albanese, Angela Anna Aron, Richard Martin Bastin, Françoise Beltrán-Meneu, María J. Bierstedt, Klaus-Dieter Bonilla, Antonio Braun, Rüdiger W. Cascales, Bernardo Conejero, J. Alberto Defant, Andreas Dierolf, Susanne Domański, Paweł Díaz Alcaide, Juan Carlos Díaz-Madrigal, Santiago Engliš, Miroslav Fernández Rosell, Carmen Frerick, Leonhard Friz, Miguel Galbis, Antonio Galindo Pastor, Pablo García Rodríguez, Domingo Gómez-Collado, María del Carmen Gómez-Orts, Esther Jordá, Enrique Jornet, David Kalmes, Thomas Khin Aye Aye Langenbruch, Michael Lindström, Mikael Lusky, Wolfgang Maestre Vera, Manuel Mangino, Elisabetta M. Martínez-Giménez, Félix Meise, Reinhold G. Melikhov, Sergeĭ Nikolaevich Mengestie, Tesfa Y. Metafune, Giorgio Momm, Siegfried Moscatelli, Vincenzo Bruno Mujica, Jorge Okada, Susumu[1] Peris, Alfredo Pérez Carreras, Pedro Ramanujan, Melapalayam S. Ribera, Juan M. Ricker, Werner J. Rodríguez-Arenas, Alberto Santacreu, Daniel Schmets, Jean Sevilla-Peris, Pablo Seyoum, Werkafarahu Skrzypczak, Leszek Taskinen, Jari Taylor, B. Alan Valdivia Ureña, Manuel Vogt, Dietmar Vukotić, Dragan Wegner, Sven-Ake Wengenroth, Jochen Wolf, Elke Worku, Mafuz Wright, John David Maitland de Pagter, Ben

See Less

Publications (by number in area)

Fourier analysis Functional analysis Functions of a complex variable General History and biography Measure and integration Operator theory Partial differential equations Sequences, series, summability Several complex variables and analytic spaces

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Scientific work at a glance, Summary

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Bonet, José

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MR Author ID:	**39165**
Earliest Indexed Publication:	1980
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Total Related Publications:	**3**
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⊞ Published as: Bonet Solves, José (2)

Scientific work at a glance, Coauthors

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Co-authors (by number of collaborations)

Agethen, Simone · Albanese, Angela Anna · Aron, Richard Martin · Bastin, Françoise · Beltrán-Meneu, María J. · Bierstedt, Klaus-Dieter · Bonilla, Antonio · Braun, Rüdiger W. · Cascales, Bernardo · Conejero, J. Alberto · Defant, Andreas · Dierolf, Susanne · Domański, Paweł · Díaz Alcaide, Juan Carlos · Díaz-Madrigal, Santiago · Engliš, Miroslav · Fernández Rosell, Carmen · Frerick, Leonhard · Friz, Miguel · Galbis, Antonio · Galindo Pastor, Pablo · García Rodríguez, Domingo · Gómez-Collado, María del Carmen · Gómez-Orts, Esther · Jordá, Enrique · Jornet, David · Kalmes, Thomas · Khin Aye Aye · Langenbruch, Michael · Lindström, Mikael · Lusky, Wolfgang · Maestre Vera, Manuel · Mangino, Elisabetta M. · Martínez-Giménez, Félix · Meise, Reinhold G. · Melikhov, Sergeĭ Nikolaevich · Mengestie, Tesfa Y. · Metafune, Giorgio · Momm, Siegfried · Moscatelli, Vincenzo Bruno · Mujica, Jorge · Okada, Susumu[1] · Peris, Alfredo · Pérez Carreras, Pedro · Ramanujan, Melapalayam S. · Ribera, Juan M. · Ricker, Werner J. · Rodríguez-Arenas, Alberto · Santacreu, Daniel · Schmets, Jean · Sevilla-Peris, Pablo · Seyoum, Werkaferahu · Skrzypczak, Leszek · Taskinen, Jari · Taylor, B. Alan · Valdivia Ureña, Manuel · Vogt, Dietmar · Vukotić, Dragan · Wegner, Sven-Ake · Wengenroth, Jochen · Wolf, Elke · Worku, Mafuz · Wright, John David Maitland · de Pagter, Ben

Scientific work at a glance, areas of work

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Publications (by number of citations)

Fourier analysis · **Functional analysis** · Functions of a complex variable · General · History and biography · Measure and integration · **Operator theory** · Partial differential equations · Sequences, series, summability · Several complex variables and analytic spaces

1982 Pepe's first international publication

Arch. Math., Vol. 39, 340—347 (1982)

0003-889X/82/3904-0340 $ 3.10/0

Remarks and examples concerning suprabarreled and totally barreled spaces

By

PEDRO PÉREZ CARRERAS and JOSÉ BONET

The linear spaces we shall use are defined over the field of the real or complex numbers. If A is a subset of a linear space we denote by $[A]$ its linear span. In what follows a space means a Hausdorff locally convex topological linear space. A space E is Baire-like, [4], if given an increasing sequence of closed absolutely convex subsets of E covering E there is one of them which is a 0-neighbourhood in E. A space E is suprabarreled, [7], if given an increasing sequence of subspaces of E covering E there is one of them which is barreled and dense in E. A space E is totally barreled, [10], if given a sequence of subspaces of E covering E there is one of them which is barreled and its closure is of finite codimension in E. A space E is unordered-Baire-like, [6], if given a sequence of subspaces of E covering E there is one of them which is barreled and dense in E. The following implications are clear: unordered-Baire-like ⇒ totally barreled ⇒ suprabarreled ⇒ Baire-like ⇒ Barreled. Examples of spaces distinguishing the quoted classes can be found in [4], [6], [7] and [10]. Let φ be a linear space of countable algebraic dimension endowed with the finest locally convex topology. A space E contains φ if it contains a linear subspace which is isomorphic to φ with the induced topology.

In I we add some results which enlarge the study done in [10] on totally barreled spaces. II and IV follow observations of M. Valdivia in order to construct examples of totally barreled spaces which are not inductive limit of unordered-Baire-like spaces and Baire-like non suprabarreled spaces respectively. In III an idea of S. Dierolf is used to give example of suprabarreled non inductive limit of totally barreled spaces. In IV it is shown that every Fréchet space which does not admit a continuous norm contains a proper dense subspace which is an (LF)-space.

I. On totally barreled spaces: some remarks.

Proposition 1. *Let E be a space. E is totally barreled if and only if given a sequence of subspaces of E covering E there is one of them which is Baire-like.*

Proof. If E is totally barreled it is enough to apply [10], Theorem 5 to conclude that one of the subspaces which cover E is totally barreled and therefore Baire-like. Reciprocally, let (H_n) be a sequence of subspaces of E covering E. According to our

1987 Pepe's first book


NORTH-HOLLAND
MATHEMATICS STUDIES 131

Notas de Matemática
editor: Leopoldo Nachbin

Barrelled
Locally Convex Spaces

P. PÉREZ CARRERAS
J. BONET

Pepe's first international scientific adventures: Klaus and Jean, I

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1983 Stay in Paderborn with Klaus Bierstedt Start research on weighted inductive limits with K. Bierstedt (23 joint papers) and R. Meise (17 joint papers).

Pepe's first international scientific adventures: Klaus and Jean, I

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1988 Distinguished Köthe echelon spaces $\Lambda_1(I, A)$ distinguished if and only if it satisfies the Density Condition with Klaus Bierstedt
1984-1987 Stay in Liege Joint work with Jean Schmets on C(X,E) (3 joint papers).

Klaus with Pepe's family

1988 Distinguished Köthe echelon spaces and Density Condition

Math. Nachr. 135 (1988) 149–180

Stefan Heinrich's Density Condition for Fréchet Spaces and the Characterization of the Distinguished Köthe Echelon Spaces

Dedicated to Professor Gottfried Köthe on the occasion of his 80th birthday

By Klaus D. Bierstedt of Paderborn and José Bonet of Valencia

(Received May 15, 1986)

0. Introduction

In the series [1]–[4] of articles, the first-named author and Reinhold Meise (Düsseldorf), as well as, in part, Bill Summers (Fayetteville, Ark.), treated countable locally convex inductive limits of weighted spaces of continuous or holomorphic functions and developed the *method of a "projective description"* of such inductive limit spaces. One of the original aims was to give a canonical, sufficiently general, and useful representation of the inductive limit topology and its continuous seminorms by associating a certain "projective hull".

The corresponding spaces of *holomorphic* functions naturally arise, e.g., in the treatment of linear partial differential equations and convolution equations via Fourier-Laplace transform (see [1, Section 4.]). For most applications to spaces of holomorphic functions, the original aim was already achieved in [1, Theorem 1.6] (which, by use of a clever open mapping lemma due to A. Baernstein II, easily followed from a result on spaces of continuous functions where partition of unity arguments permitted to conclude). But, rather concentrating on the setting of *continuous* functions, it is natural to ask for a *characterization* (in terms of the decreasing sequence $\mathcal{V} = (v_n)_n$ of weights) when the inductive limit space can actually be identified algebraically and topologically with its associated projective hull.

The situation proved to be much easier for *o-growth conditions* given by a decreasing sequence $\mathcal{V} = (v_n)_n$ of continuous weights on a locally compact space X: Then the weighted inductive limit $\mathcal{V}_0 C(X)$ always is a topological subspace of the projective hull $C\bar{V}_0(X)$, and algebraic equality holds if and only if $\mathcal{V}$ is "regularly decreasing" ([1, Theorem 2.6]). On the other hand, for *O-growth conditions*, the situation is completely different: In that case, the weighted inductive limit $\mathcal{V}C(X)$ always equals its associated projective hull $C\bar{V}(X)$ algebraically, and the two locally convex spaces even have the same bounded sets, but the inductive limit topology of $\mathcal{V}C(X)$ can be strictly stronger than the weighted topology of $C\bar{V}(X)$.

1988 Distinguished Köthe echelon spaces and Density Condition, II

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Definition. (S.Heinrichs)

Given a Hausdorff locally convex space E, denoted by $\mathcal{U}_0$ the system of all closed absolutely convex neighborhoods of 0, E is said to satisfy Heinrichs density condition if for any given function $\lambda : \mathcal{U}_0 \to]0, +\infty[$, and any arbitrary V in $\mathcal{U}_0$, there exists a finite subset $\mathcal{W}$ of $\mathcal{U}_0$ and a bounded set B such that

$$\cap_{U \in \mathcal{W}} \lambda(U) U \subset B + V.$$

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Definition. Distinguished LCS

A Hausdorff locally convex space E, is called distinguished if its topological dual endowed with the strong topology is barrelled.

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Theorem (Bonet, Bierstedt)

A Fréchet space E, satisfies the density condition if and only if each bounded subset of the strong dual E'_β is metrizable.

1988 Distinguished Köthe echelon spaces and Density Condition and III

1988 Distinguished Köthe echelon spaces and Density Condition and III

They gave the characterization of echelon Köthe spaces $\lambda_p(I, A)$ ($1 \leqslant p < \infty$) having the density condition and in the case $p = 1$ they proved the following theorem.

1988 Distinguished Köthe echelon spaces and Density Condition and III

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Theorem (Bonet, Bierstedt).

A echelon Köthe spaces $\lambda_1(I, A)$ satisfies the density condition if and only if $\lambda_1(I, A)$ is distinguished.

1988 Distinguished Köthe echelon spaces and Density Condition and III

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Theorem (Bonet, Bierstedt).

A echelon Köthe spaces $\lambda_1(I, A)$ satisfies the density condition if and only if $\lambda_1(I, A)$ is distinguished.

And many other results for tensor products and vector valued spaces.....

1988 Dual Density Condition

Results in Mathematics
Vol. 14 (1988)

0378-6218/88/040242-33$1.50+0.20/0
(c) 1988 Birkhäuser Verlag, Basel

Dual Density Conditions in (DF)–spaces, I.

Klaus D. Bierstedt and José Bonet

Abstract. *We define the two "dual density conditions" (DDC) and (SDDC) for locally convex topological vector spaces and study them in the setting of the class of (DF)-spaces (originally introduced by A. Grothendieck [14]). We show that for a (DF)-space E, (DDC) is equivalent to the metrizability of the bounded subsets of E, and prove that such a space E has (DDC) resp. (SDDC) if and only if the space $l_\infty(E)$ of all bounded sequences in E is quasibarrelled resp. bornological.*

As a consequence, we can then characterize the barrelled spaces $\mathcal{L}_b(\lambda_1, E)$ of continuous linear mappings from a Köthe echelon space λ_1 into a locally complete (DF)-space E; for purposes of a comparison, we also provide the corresponding characterization of the quasi-barrelled resp. bornological (DF)-tensor products $(\lambda_1)'_b \otimes_\epsilon E$. Our results on the (DF)-spaces of type $\mathcal{L}_b(\lambda_1, E)$ and $(\lambda_1)'_b \otimes_\epsilon E$ are of special interest in view of the recent negative solution, due to J. Taskinen (see [25]), of Grothendieck's "problème des topologies" ([15]). — In part II of the article, we will treat weighted inductive limits of spaces of continuous functions and their projective hulls (cf. [6]) as an application.

In his study of ultrapowers of locally convex spaces, S. Heinrich [16] had found it necessary to introduce the "density condition". Our article [2] investigated this condition, mainly in the setting of Fréchet spaces, and with applications to distinguished echelon spaces λ_1. However, on the way to the main theorems of [2], it became apparent that the "right" setting for most of this material was a dual reformulation of the density condition in the context of (DF)-spaces, and this observation prompted the present research.

Introduction

S. Heinrich [16] introduced his *"density condition"* in the context of ultraproducts of locally convex (l. c.) spaces and gave some basic facts. Since each (DF)-space satisfies the density condition, it was natural to restrict attention to *Fréchet spaces*, and we studied the density condition in this setting in our article [2]. Two different charcterizations were derived in [2]: A metrizable l. c. space E satisfies the density condition if and only if each bounded subset of the strong dual E'_b is metrizable, and this holds if and only if the space $l_1(E)$ of all absolutely summable sequences in E is distinguished.

As the main application of our study, we deduced the characterization of the distinguished Köthe echelon spaces $\lambda_1 = \lambda_1(I, A)$ (on a general index set I) by the condition (D) on the Köthe matrix A. (One direction had already been obtained in [4], but the fact that λ_1 is distinguished if and only if it satisfies the density condition helped us to conclude that condition (D) is necessary, too.) Moreover, we characterized the distinguished echelon spaces $\lambda_1(E)$ with values in a Fréchet space E in [2], Corollary 2.8, and at the end of that article proved that for echelon spaces λ_p of order p, $1 < p < \infty$ or $p = 0$, when λ_p is always distinguished, the density condition is equivalent to condition (D).

1988 Pepe in one The Wangerooge Meetings on Functional Analysis

Pepe with Jean

Pepe with Susanne Dierolf (17 joint papers)

Definition.

A locally convex space (E, τ) is called an (LF) space if there exists an increasing sequence (E_n) of subspaces of E such that

Pepe with Susanne Dierolf (17 joint papers)

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- each inclusion $j_{n,n+1}(E_n, \tau_n) \to (E_{n+1}, \tau_{n+1})$ is continuous,
- and τ is the finest locally convex topology that makes every inclusion $j_n : (E_n, \tau_n) \to (E, \tau)$ continuous.

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- and τ is the finest locally convex topology that makes every inclusion $j_n : (E_n, \tau_n) \to (E, \tau)$ continuous.

(E, τ) is called an strict (LF) space if each $j_{n,n+1}$ is an isomorphism into its image.

1998 Solution to a problem by Grothendieck With Susanne Dierolf

Results in Mathematics
Vol. 13 (1988)

0378-6218/88/020023-10$1.50+0.20/0

A note on biduals of strict (LF)-spaces

by

José Bonet and Susanne Dierolf

Abstract. Grothendieck asked in 1954 in [1] the following questions.
(1) Is the bidual of a strict inductive limit of a sequence of locally convex spaces the inductive limit of the biduals?
(2) Is the bidual of a strict (LF)-space again an (LF)-space?
(3) Is the bidual of a strict (LF)-space complete?
M. Valdivia gave a (negative) answer to the first question in 1979 in [5]. Since his counterexample is not an (LF)-space, problem (2) remained open. The aim of this note is to present a negative solution to questions (2) and (3). The answer to question (2) is negative even if every step of the

Pepe with Susanne Dierolf and Carmina Fernández (14 joint papers)

Pepe with Susanne Dierolf and Carmina Fernández (14 joint papers)

Grothendieck asked (question 5) Given E a distinguished Fréchet space, is its bidual E'' distinguished too?

Pepe and Carmina

1991 Pepe Susanne and Carmina Fernández: Grothendieck 2

Arch. Math., Vol. 57, 475–478 (1991)

0003-889X/91/5705-0475 $ 2.30/0

The bidual of a distinguished Fréchet space need not be distinguished

By

J. Bonet, S. Dierolf and C. Fernández

A locally convex space E is called distinguished if its strong dual $(E', \beta(E', E))$ is barrelled. In 1954, A. Grothendieck [3; p. 120, Questions non Résolues 5)] posed the problem, whether the bidual of a distinguished Fréchet space is again distinguished. In this note we give a negative answer to that question. We make use of the fact that Fréchet spaces of Moscatelli type of the form

$$E = \{(y_k)_{k \in \mathbf{N}} \in Y^{\mathbf{N}} \colon (f(y_k))_{k \in \mathbf{N}} \in c_0(X)\},$$

where Y, X are Banach spaces and $f\colon Y \to X$ a continuous linear map, are always distinguished, and we prove that E has a distinguished bidual if and only if f is open onto its range. More generally, we prove that Fréchet spaces of the form

$$F = \{(y_k)_{k \in \mathbf{N}} \in Y^{\mathbf{N}} \colon (f(y_k))_{k \in \mathbf{N}} \in l^\infty(X)\}$$

are distinguished if and only if they are quasinormable.

Pepe With Jari Taskinen et alters

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1988-1989 Jari Taskinen (24 joint papers) several joint papers on Tensor products and on spaces of holomorphic functions

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Definition

Given G an open subset of $\mathbb{C}^n$ any continuous function $w : G \to]0, +\infty[$ is called a **weight** on G. If we denote

$$B_w = \{f \in H(G) \ : \ |f(z)| \leqslant w(z) \text{ for all } z \in G\}.$$

then **associated weight** $\tilde{w} : G \to [0, +\infty[$ is defined by

$$\tilde{w}(z) = \sup\{|f(z)| \ : \ f \in B_w\},$$

for every $z \in G$.

Taskinen

A sample with Taskinen (165 citations)

STUDIA MATHEMATICA 127 (2) (1998)

Associated weights and spaces of holomorphic functions

by

KLAUS D. BIERSTEDT (Paderborn), JOSÉ BONET (Valencia) and JARI TASKINEN (Helsinki)

Abstract. When treating spaces of holomorphic functions with growth conditions, one is led to introduce associated weights. In our main theorem we characterize, in terms of the sequence of associated weights, several properties of weighted (LB)-spaces of holomorphic functions on an open subset $G \subset \mathbb{C}^N$ which play an important role in the projective description problem. A number of relevant examples are provided, and a "new projective description problem" is posed. The proof of our main result can also serve to characterize when the embedding of two weighted Banach spaces of holomorphic functions is compact. Our investigations on conditions when an associated weight coincides with the original one and our estimates of the associated weights in several cases (mainly for $G = \mathbb{C}$ or D) should be of independent interest.

Another one with Domanski, Lindström and Taskinen (116 citations)

J. Austral. Math. Soc. (*Series A*) **64** (1998), 101–118

COMPOSITION OPERATORS BETWEEN WEIGHTED BANACH SPACES OF ANALYTIC FUNCTIONS

J. BONET, P. DOMAŃSKI, M. LINDSTRÖM and J. TASKINEN

(Received 19 February 1997)

Communicated by P. G. Dodds

Abstract

We characterize those analytic self-maps φ of the unit disc which generate bounded or compact composition operators C_φ between given weighted Banach spaces H_v^∞ or H_v^0 of analytic functions with the weighted sup-norms. We characterize also those composition operators which are bounded or compact with respect to all reasonable weights v.

1991 *Mathematics subject classification* (*Amer. Math. Soc.*): primary 47B38; secondary 30D55, 46E15.

0. Introduction

Another recent paper with Taskinen

Rev. Mat. Iberoam. **34** (2018), no. 2, 593–608
DOI 10.4171/RMI/996

Solid hulls of weighted Banach spaces of entire functions

José Bonet and Jari Taskinen

Abstract. Given a continuous, radial, rapidly decreasing weight v on the complex plane, we study the solid hull of its associated weighted space $H_v^\infty(\mathbb{C})$ of all the entire functions f such that $v|f|$ is bounded. The solid hull is found for a large class of weights satisfying the condition (B) of Lusky. Precise formulations are obtained for weights of the form $v(r) = \exp(-ar^p), a > 0, p > 0$. Applications to spaces of multipliers are included.

1. Introduction and first results

The aim of this paper is to investigate the solid hull of weighted Banach spaces $H_v^\infty(\mathbb{C})$ of all entire functions f such that $\|f\|_v := \sup_{z\in\mathbb{C}} v(z)|f(z)|$ is finite. In what follows, we identify an entire function $f(z) = \sum_{n=0}^\infty a_n z^n$ with the sequence of its Taylor coefficients $(a_n)_{n=0}^\infty$. For example in the case $v(z) = e^{-|z|}, z \in \mathbb{C}$, we show in Theorem 3.1 that the solid hull consists precisely of complex sequences $(b_m)_{m=0}^\infty$ such that

$$\sup_{n\in\mathbb{N}} \sum_{m=n^2+1}^{(n+1)^2} |b_m|^2 e^{-2n^2} n^{4m} < \infty.$$

We are also able to characterize in Theorem 2.5, the solid hulls for a quite general class of weights in terms of numerical sequences defined by Lusky, [18], in his investigations of the isomorphic classes of the spaces $H_v^\infty(\mathbb{C})$. This class of weights includes those satisfying condition (B) of [18], see Remark 2.7 and Corollary 2.8. The calculation of the numerical sequences for some important weights v is one of the results of our paper, see Proposition 3.2. In addition to techniques of [18], our approach uses the methods of Bennett, Stegenga and Timoney in their paper [2], where the solid hull and the solid core of the weighted spaces $H_v^\infty(\mathbb{D})$ were determined for doubling weights v on the open unit disc $\mathbb{D}$. In Section 4 we show that

A recent paper with Luski Taskinen

Rev Mat Complut (2018) 31:781–804
https://doi.org/10.1007/s13163-018-0265-6

CrossMark

Solid hulls and cores of weighted H^∞-spaces

José Bonet[1] · **Wolfgang Lusky**[2] · **Jari Taskinen**[3]

Received: 27 October 2017 / Accepted: 10 May 2018 / Published online: 26 May 2018

Abstract We determine the solid hull and solid core of weighted Banach spaces H_v^∞ of analytic functions functions f such that $v|f|$ is bounded, both in the case of the holomorphic functions on the disc and on the whole complex plane, for a very general class of radial weights v. Precise results are presented for concrete weights on the disc that could not be treated before. It is also shown that if H_v^∞ is solid, then the monomials are an (unconditional) basis of the closure of the polynomials in H_v^∞. As a consequence H_v^∞ does not coincide with its solid hull and core in the case of the disc. An example shows that this does not hold for weighted spaces of entire functions.

Keywords Weighted Banach spaces of analytic functions · Solid hull · Solid core · Schauder basis

Mathematics Subject Classification 46E15 · 30H20 · 46B15 · 46B45

Dedicated to the memory of our friend Bernardo Cascales.

✉ José Bonet
jbonet@mat.upv.es

Wolfgang Lusky
lusky@uni-paderborn.de

Jari Taskinen
jari.taskinen@helsinki.fi

1 Instituto Universitario de Matemática Pura y Aplicada IUMPA, Universitat Politècnica de València, 46071 Valencia, Spain

2 FB 17 Mathematik und Informatik, Universität Paderborn, 33098 Paderborn, Germany

Pepe With Luski, Reinhold Meise and Dietmar Vogt

Pepe With Luski, Reinhold Meise and Dietmar Vogt

Pepe With Reinhold Meise

STUDIA MATHEMATICA 126 (2) (1997)

On the range of convolution operators on non-quasianalytic ultradifferentiable functions

by

J. BONET (Valencia), A. GALBIS (Valencia)
and R. MEISE (Düsseldorf)

Abstract. Let $\mathcal{E}_{(\omega)}(\Omega)$ denote the non-quasianalytic class of Beurling type on an open set Ω in $\mathbb{R}^n$. For $\mu \in \mathcal{E}'_{(\omega)}(\mathbb{R}^n)$ the surjectivity of the convolution operator $T_\mu : \mathcal{E}_{(\omega)}(\Omega_1) \to \mathcal{E}_{(\omega)}(\Omega_2)$ is characterized by various conditions, e.g. in terms of a convexity property of the pair (Ω_1, Ω_2) and the existence of a fundamental solution for μ or equivalently by a slowly decreasing condition for the Fourier–Laplace transform of μ. Similar conditions characterize the surjectivity of a convolution operator $S_\mu : \mathcal{D}'_{\{\omega\}}(\Omega_1) \to \mathcal{D}'_{\{\omega\}}(\Omega_2)$ between ultradistributions of Roumieu type whenever $\mu \in \mathcal{E}'_{\{\omega\}}(\mathbb{R}^n)$. These results extend classical work of Hörmander on convolution operators between spaces of C^∞-functions and more recent one of Ciorănescu and Braun, Meise and Vogt.

Since the classical work of Ehrenpreis [10] and Hörmander [14], convo-

Pepe With Reinhold Meise

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Pawel Domanski 2007

Pepe and Golden times with Pawel Domanski (20 joint papers) I

PROCEEDINGS OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 129, Number 2, Pages 495–503
S 0002-9939(00)05867-6
Article electronically published on August 28, 2000

PARAMETER DEPENDENCE OF SOLUTIONS OF PARTIAL DIFFERENTIAL EQUATIONS IN SPACES OF REAL ANALYTIC FUNCTIONS

JOSÉ BONET AND PAWEŁ DOMAŃSKI

(Communicated by Christopher D. Sogge)

Dedicated to V. P. Zaharjuta on the occasion of his 60th birthday

Abstract. Let $\Omega \subseteq \mathbb{R}^n$ be an open set and let $A(\Omega)$ denote the class of real analytic functions on Ω. It is proved that for every surjective linear partial differential operator $P(D,x) : A(\Omega) \to A(\Omega)$ and every family $(f_\lambda) \subseteq A(\Omega)$ depending holomorphically on $\lambda \in \mathbb{C}^m$ there is a solution family $(u_\lambda) \subseteq A(\Omega)$ depending on λ in the same way such that

$$P(D,x)u_\lambda = f_\lambda, \qquad \text{for } \lambda \in \mathbb{C}^m.$$

The result is a consequence of a characterization of Fréchet spaces E such that the class of "weakly" real analytic E-valued functions coincides with the analogous class defined via Taylor series. An example shows that the analogous assertions need not be valid if $\mathbb{C}^m$ is replaced by another set.

1. Introduction

In the paper [4], the authors proved that for any surjective linear continuous

Pepe and Golden times with Pawel Domanski (20 joint papers) II

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SCIENCE DIRECT

Journal of Functional Analysis 230 (2006) 329–381

JOURNAL OF Functional Analysis

www.elsevier.com/locate/jfa

Parameter dependence of solutions of differential equations on spaces of distributions and the splitting of short exact sequences

José Bonet[a], Paweł Domański[b,*]

[a]Departamento de Matemática Aplicada and IMPA, E.T.S. Arquitectura, Universidad Politécnica de Valencia E-46071 Valencia, Spain

[b]Faculty of Mathematics and Computer Science, A. Mickiewicz University Poznań and Institute of Mathematics, Polish Academy of Sciences (Poznań branch) Umultowska 87, 61-614 Poznań, Poland

Received 9 December 2004; accepted 2 June 2005

Communicated by G. Pisier

Available online 31 August 2005

Abstract

We show that a linear partial differential operator with constant coefficients $P(D)$ is surjective on the space of E-valued (ultra-)distributions over an arbitrary convex set if E' is a nuclear Fréchet space with property (DN). In particular, this holds if E is isomorphic to the space of tempered distributions S' or to the space of germs of holomorphic functions over a one-point set $H(\{0\})$. This result has an interpretation in terms of solving the scalar equation $P(D)u = f$ such that the solution u depends on parameter whenever the right-hand side f also depends on the parameter in the same way. A suitable analogue for surjective convolution operators over $\mathbb{R}^d$ is obtained as well. To get the above results we develop a splitting theory for short exact sequences of the form

Pepe and Golden times with Pawel Domanski (20 joint papers) and III

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Advances in Mathematics 217 (2008) 561–585
ADVANCES IN Mathematics
www.elsevier.com/locate/aim

The splitting of exact sequences of PLS-spaces and smooth dependence of solutions of linear partial differential equations ☆

José Bonet [a,*], Paweł Domański [b,c]

[a] *Departamento de Matemática Aplicada, Instituto de Matemática Pura y Aplicada, Universidad Politécnica de Valencia, E-46071 Valencia, Spain*
[b] *Faculty of Mathematics and Comp. Sci., A. Mickiewicz University, Umultowska 87, 61-614 Poznań, Poland*
[c] *Institute of Mathematics, Polish Academy of Sciences (Poznań branch), Umultowska 87, 61-614 Poznań, Poland*

Received 19 October 2006; accepted 17 July 2007

Available online 24 October 2007

Communicated by Michael Collver

Abstract

We investigate the splitting of short exact sequences of the form

$$0 \longrightarrow X \longrightarrow Y \longrightarrow E \longrightarrow 0,$$

where E is the dual of a Fréchet Schwartz space and X, Y are PLS-spaces, like the spaces of distributions or real analytic functions or their subspaces. In particular, we characterize pairs (E, X) as above such that $\mathrm{Ext}^1(E, X) = 0$ in the category of PLS-spaces and apply this characterization to many natural spaces

Pepe and Andreas Young guys!!!

Pepe and Andreas middle aged gentlemen

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces I

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces I

Teorem Riemann

Given a conditionally convergent series $\sum_{n=1}^{+\infty} a_n$ in $\mathbb{R}$ and given $-\infty \leqslant \alpha \leqslant \beta \leqslant +\infty$ there exists a permutation $\sigma : \mathbb{N} \to \mathbb{N}$ such that the series $\sum_{n=1}^{+\infty} a_{\sigma n}$ satisfies that

$$\liminf S_k = \alpha \quad \text{and} \quad \limsup S_k = \beta,$$

where $S_k = \sum_{n=1}^{k} a_{\sigma n}$.

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces I

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where $S_k = \sum_{n=1}^{k} a_{\sigma n}$.

THEOREM Levy 1905-Steinitz 1910

Let $\sum_{n=1}^{+\infty} a_n$ be a series in $\mathbb{R}^n$. The domain of sums of every convergent rearrangement of this series is either the empty set or an affine subspace of $\mathbb{R}^N$.

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces I

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Generalized by Banaszczyk in 1990 to nuclear Fréchet spaces.

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces II

ISRAEL JOURNAL OF MATHEMATICS **117** (2000), 131–156

THE LEVY–STEINITZ REARRANGEMENT THEOREM FOR DUALS OF METRIZABLE SPACES

BY

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AND

ANDREAS DEFANT

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D-26111 Oldenburg, Germany
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ABSTRACT

Extending the Levy–Steinitz rearrangement theorem in $\mathbb{R}^n$, which in turn extended Riemann's theorem, Banaszczyk proved in 1990/93 that a metrizable, locally convex space is nuclear if and only if the domain of sums of every convergent series (i.e. the set of all elements in the space which are sums of a convergent rearrangement of the series) is a translate of a closed subspace of a special form. In this paper we present an apparently complete analysis of the domains of sums of convergent series in duals of metrizable spaces or, more generally, in (DF)-spaces in the sense

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces III

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces III

Pepe and Andreas Israel J. 2000

Let E be a complete nuclear (DF)-space.
For each convergent series $\sum_{k=1}^{+\infty} u_k$ in E the domain of sums of convergent rearrangement of this series is an affine subspace of E.

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces III

Pepe and Andreas Israel J. 2000

Let E be a complete nuclear (DF)-space.
For each convergent series $\sum_{k=1}^{+\infty} u_k$ in E the domain of sums of convergent rearrangement of this series is an affine subspace of E.

Actually they gave a very precise description of the affine subspace and prove the following counterpart:

The Levy-Steinitz Rearragement theorem for dual of metrizable spaces III

Pepe and Andreas Israel J. 2000

Let E be a complete nuclear (DF)-space.
For each convergent series $\sum_{k=1}^{+\infty} u_k$ in E the domain of sums of convergent rearrangement of this series is an affine subspace of E.

Actually they gave a very precise description of the affine subspace and prove the following counterpart:

Pepe and Andreas Israel J. 2000

Let E be a complete (DF)-space if each convergent series $\sum_{k=1}^{+\infty} u_k$ in E the domain of sums of convergent rearrangement of this series is this precise affine subspace of E, then the space is nuclear.

Some of Pepe's Phd Students: Antonio

Some of Pepe's Phd Students: Antonio

TRANSACTIONS OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 353, Number 6, Pages 2275–2291
S 0002-9947(01)02780-5
Article electronically published on February 7, 2001

NONRADIAL HÖRMANDER ALGEBRAS OF SEVERAL VARIABLES AND CONVOLUTION OPERATORS

JOSÉ BONET, ANTONIO GALBIS, AND SIEGFRIED MOMM

To our friend Jean Schmets on the occasion of his 60th birthday

Abstract. A characterization of the closed principal ideals in nonradial Hörmander algebras of holomorphic functions of several variables in terms of the behaviour of the generator is obtained. This result is applied to study the range of convolution operators and ultradifferential operators on spaces of quasianalytic functions of Beurling type. Contrary to what is known to happen in the case of non-quasianalytic functions, an ultradistribution on a space of quasianalytic functions is constructed such that the range of the operator does not contain the real analytic functions.

Let $u, v : \mathbb{R} \to \mathbb{R}$ be continuous, non-negative and even functions which are increasing on the positive real numbers. We assume that v is convex and the quotient $\frac{u(x)}{v(x)}$ tends to zero as $x \to \infty$. Both functions are extended to $\mathbb{R}^N$ as follows:

$$u(x_1, \ldots, x_N) := \sum^{N} u(x_j), \quad v(x_1, \ldots, x_N) := \sum^{N} v(x_j)$$

Some of Pepe's Phd Students: Alfred

Definition

Given E a locally convex space a continuous operator $T : E \to E$ is called **hypercyclic** is its orbit

$$Orb(T) = \{x, Tx, T^2x, \ldots\}$$

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Theorem. Bonet Peris 1998

Every separable infinite dimensional Fréchet space admits a hypercyclic surjective operator.

Pepe with Alfred (9 joint papers)

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Hypercyclic Operators on Non-normable Fréchet Spaces

José Bonet and Alfredo Peris*

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Every infinite dimensional separable non-normable Fréchet space admits a continuous hypercyclic operator. A large class of separable countable inductive limits of Banach spaces with the same property is given, but an example of a separable complete inductive limit of Banach spaces which admits no hypercyclic operator is provided. It is also proved that no compact operator on a locally convex space is hypercyclic.

In the article [1] S. Ansari solved a long-standing problem of Rolewicz showing that every infinite dimensional separable Banach space admits a hypercyclic operator. This result was obtained independently by L. Bernal-Gonzalez [3]. An operator T on a locally convex space E is called hypercyclic if $\mathrm{Orb}(T, x) := \{x, Tx, T^2x, ...\}$ is dense in E for some $x \in E$. In this case x is a hypercyclic vector for T. A corollary of the main result of [1] asserts that every separable Fréchet space (i.e. complete metrizable locally convex space) admits a hypercyclic operator. Unfortunately the proof, which is correct for Banach spaces, contains a gap in the case of non-normable Fréchet spaces. Indeed, the proof is based on Remark 1 (4) which is false, since it is very easy to show that the dual of every non-normable Fréchet space E contains sequences $(u_n)_n$ such that $(\alpha_n u_n)_n$ is not equicontinuous in E' for every sequence $(\alpha_n)_n$ of strictly positive numbers. See, e.g., [14, 3.1.4, p. 431].

Hypercyclicity of continuous linear operators on non-normable Fréchet spaces has been considered by several authors like Gethner and Shapiro [8], Godefroy and Shapiro [9] among others. In [9] the authors study

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Theorem. Bonet 2000

Every convolution operator on a space of ultradifferentiable functions of Beurling or Roumieu type and on the corresponding space of ultradistributions is hypercyclic and chaotic when it is not a multiple of the identity.

Pepe Chaotic

HYPERCYCLIC AND CHAOTIC CONVOLUTION OPERATORS

JOSÉ BONET

ABSTRACT

Every convolution operator on a space of ultradifferentiable functions of Beurling or Roumieu type and on the corresponding space of ultradistributions is hypercyclic and chaotic when it is not a multiple of the identity. The operator of differentiation is hypercyclic on the space $A^{-\infty}$, but it need not be hypercyclic on radial weighted algebras of entire functions.

1. *Introduction*

The purpose of this paper is to study the hypercyclic and chaotic behaviour of certain differential operators. We prove in Theorem 4 that convolution operators on spaces of ultradifferentiable functions of Beurling or Roumieu type and also on the spaces of ultradistributions of these two types are hypercyclic and chaotic when they are not scalar multiples of the identity. In particular the result holds for Gevrey classes and for linear partial differential operators of infinite order, but it is also new for the classical distributions. We observe that many of these spaces of functions or distributions are not Fréchet spaces since they need not be metrizable. The behaviour of the operator of differentiation on certain weighted inductive limits of spaces of holomorphic functions is discussed in Section 4. We consider the space $A^{-\infty}$ of Korenblum in Corollary 10 and certain weighted algebras of entire functions [**3**, Chapter 2] in Theorem 11. Our results show that concrete operators may have an interesting hypercyclic behaviour in non-metrizable locally convex spaces which appear in complex analysis or convolution equations. There has recently been great interest in hypercyclic and chaotic linear operators on infinite dimensional spaces and in their applications. We mention [**1**, **4**, **5**, **11**, **19**, **22**, **31**]. Paper [**21**] is an excellent survey of the state of the art concerning hypercyclic operators on Banach and more general locally convex spaces.

Godefroy and Shapiro [**19**, 5.5, 6.2] proved that every partial differential operator on $\mathbb{R}^N$ which is not a scalar multiple of the identity is chaotic on $\mathscr{C}^\infty(\mathbb{R}^N)$, as a consequence of a theorem on continuous linear operators on $H(\mathbb{C}^N)$ which commute with translations. This theorem extended classical work of Birkhoff and MacLane showing that the operators of translation and differentiation on the space of entire functions of one complex variable are hypercyclic. In [**5**] Bernal-Gonzalez has studied the hypercyclicity of sequences of differential operators on spaces of holomorphic functions defined on open subsets of $\mathbb{C}$. Our proofs combine Godefroy and Shapiro's result [**19**, 5.1, 6.2] with an extension of the hypercyclic comparison principle

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TRANSITIVE AND HYPERCYCLIC OPERATORS ON LOCALLY CONVEX SPACES

J. BONET, L. FRERICK, A. PERIS AND J. WENGENROTH

Abstract

Solutions are provided to several questions concerning topologically transitive and hypercyclic continuous linear operators on Hausdorff locally convex spaces that are not Fréchet spaces. Among others, the following results are presented. (1) There exist transitive operators on the space φ of all finite sequences endowed with the finest locally convex topology (it was already known that there is no hypercyclic operator on φ). (2) The space of all test functions for distributions, which is also a complete direct sum of Fréchet spaces, admits hypercyclic operators. (3) Every separable infinite-dimensional Fréchet space contains a dense hyperplane that admits no transitive operator.

1. *Introduction*

A discrete dynamical system is a continuous function $f : X \longrightarrow X$ from a Hausdorff topological space X into itself. Topological transitivity was introduced in 1920 by G. D. Birkhoff, in the following way (see the survey [**16**]): the discrete dynamical system $f : X \longrightarrow X$ is called *transitive* if for each pair of non-empty open subsets U, V of X there is an $n \in \mathbb{N}$ such that $f^n(U) \cap V \neq \emptyset$. If the space X has no isolated points and there is a point $x \in X$ whose orbit $O(f, x) := \{x, f(x), f^2(x), \dots\}$ is dense in X, then f is transitive. The converse holds if X is a metrizable separable Baire space. While the existence of an element with a dense orbit implies that X must be separable, the transitivity of $f : X \longrightarrow X$ does not require that the space X be separable [**3**]. Transitivity plays an important role in many definitions of chaos, in particular in Devaney's [**11**].

A continuous and linear map $T : E \longrightarrow E$ (called an *operator* from now on) acting on a Hausdorff locally convex space E is called *hypercyclic* if there exists a vector $x \in E$ (which is called the *hypercyclic vector*) such that its orbit $O(T, x)$ is dense in E. As mentioned above, if E is a separable Fréchet space, then an operator T on E is hypercyclic if and only if it is transitive. Although the first examples of hypercyclic operators were given in the first half of the last century, much research has been done concerning hypercyclic operators during recent years, starting with

Pepe With Werner Ricker (40 joint papers)

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BULL. AUSTRAL. MATH. SOC. 46A08, 46A30
VOL. 57 (1998) [177–179]

CLOSED LINEAR MAPS FROM A BARRELLED NORMED SPACE INTO ITSELF NEED NOT BE CONTINUOUS

JOSÉ BONET

Examples of normed barrelled spaces E or quasicomplete barrelled spaces E are given such that there is a non-continuous linear map from the space E into itself with closed graph.

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This was the begining of a great friendship and of the story of 40 joint papers since 2003.

Definition

Given E a locally convex space and $T : E \to E$ a continuous linear operator, it is said to be **mean ergodic** if the following limit exists.

$$P(x) = \lim_{n \to +\infty} \frac{1}{n} \sum_{m=1}^{n} T^m(x),$$

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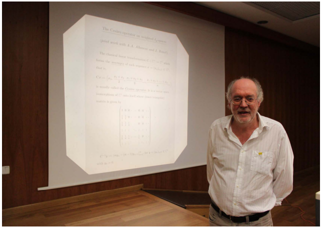
Definition

Given E a locally convex space and $T : E \to E$ a continuous linear operator, it is said to be **power bounded** if the sequence (T^m) is an equicontinuous in $\mathcal{L}(E)$.

Pepe With Angela Albanese (32 joint papers) and Werner Ricker (40 joint papers)

Angela Albanese



Werner Ricker

Pepe With Angela Albanese (32 joint papers) and Werner Ricker (40 joint papers)

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MEAN ERGODIC OPERATORS IN FRÉCHET SPACES

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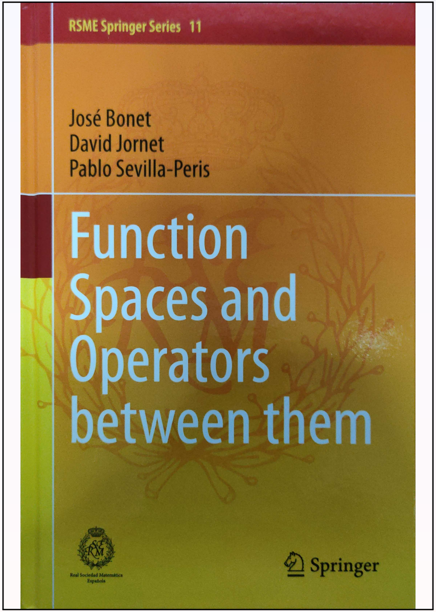
Abstract. Classical results of Pelczynski and of Zippin concerning bases in Banach spaces are extended to the Fréchet space setting, thus answering a question posed by Kalton almost 40 years ago. Equipped with these results, we prove that a Fréchet space with a basis is reflexive (resp. Montel) if and only if every power bounded operator is mean ergodic (resp. uniformly mean ergodic). New techniques are developed and many examples in classical Fréchet spaces are exhibited.

Pepe's books II



Pepe with Richard

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Results in Mathematics

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Norm Attaining Elements of the Ball Algebra $H^\infty(B_N)$

Richard M. Aron, José Bonet, and Manuel Maestre

Abstract. Let B_N be the Euclidean ball of $\mathbb{C}^N$. The space $H^\infty(B_N)$ of bounded holomorphic functions on B_N is known to have a predual, denoted by $G^\infty(B_N)$. We study the functions in $H^\infty(B_N)$ that attain their norm as elements of the dual of $G^\infty(B_N)$. We also examine similar questions for the polydisc algebra $H^\infty(\mathbb{D}^N)$ and for the space of Dirichlet series $\mathcal{D}^\infty(\mathbb{C}_+)$.

Mathematics Subject Classification. Primary 46E15; Secondary 46B04, 46B10, 46B20.

Keywords. Norm attaining, predual, ball algebra, polydisc algebra, Dirichlet series.

1. Introduction

Ando [1] proved that the Banach space $H^\infty(\mathbb{D})$ of bounded holomorphic functions on the unit disc $\mathbb{D}$ has a unique isometric predual. Let us denote it by $G^\infty(\mathbb{D})$. By the Bishop-Phelps theorem, the set $NA(G^\infty(\mathbb{D}))$ of functions $f \in H^\infty(\mathbb{D})$ which attain their norm as elements of the dual of $G^\infty(\mathbb{D})$ is a norm-dense subset of $H^\infty(\mathbb{D})$. Fisher [6] showed that $f \in H^\infty(\mathbb{D}), ||f|| = 1$, attains its norm as an element of the dual of $G^\infty(\mathbb{D})$ if and only if the radial limits $f^*(w)$ of f in the torus $\mathbb{T}$ satisfy that the set $\{w \in \mathbb{T} : |f^*(w)| = 1\}$ has positive Lebesgue measure on $\mathbb{T}$. The aim of this article is to investigate versions of Fisher's result for the Banach space of bounded holomorphic functions on the N-dimensional ball and the N-dimensional polydisc. Our main results are Theorems 5 and 8 and Propositions 6 and 7 in the case of the ball.

Richard M. Aron, José Bonet and Manuel Maestre have contributed equally to this work.

Birkhäuser

Pepe's lines of research I

- Representation of vector valued spaces of functions as sequence spaces
- Barreled locally convex spaces
- Fréchet spaces
- Inductive limits of Fréchet spaces, (LF)-spaces
- Dual of Fréchet spaces, (DF)-spaces
- Density and dual density condition
- Distinguished Köthe echelon spaces
- Locally convex tensor products
- Vector valued spaces of continuous functions $C(K, E)$
- (Inductive limits of) weighted spaces of continuous or holomorphic functions
- Four problems of Grothendieck
- Moscatelli spaces
- Problem of Topologies
- Convolution operators on space of ultradifferentiable functions
- Extension of ultradifferentiable functions
- Borel Theorem for ultradistributions.
- Bidual and predual of spaces.
- Spaces of Dirichlet series.

Pepe's lines of research II

- Spaces of holomorphic functions in one complex variable
- Spaces of holomorphic functions in several variables
- Spaces of infinite dimensional holomorphic functions
- Josefson-Nissenzweig theorem for Fréchet spaces
- Spaces of real analytic functions
- Spaces of meromorphic scalar and vector-valued functions
- Existence of solutions of partial differential equations (and surjectivity of operators associated to them)
- Parametric dependence of partial differential equations
- Comparation of ultradifferentiable classes.
- Hyperciclycity and Chaos on Fréchet and locally convex spaces
- Composition (and other) operators on H_v^∞
- Rearrangement of series
- Solution of a problem of Raikov.
- Study of solid hull of spaces of bounded weighted holomorphic spaces
- Operator theory as main line of research
- Sequence spaces
- Cesàro operator
- Mean ergodic and power bounded operator in locally convex spaces
- Predual and norm attaining elements of space of bounded holomorphic functions on the polydisc and the euclidean ball of $\mathbb{C}^n$.

Is Pepe able to do anything else apart from Mathematics?

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