The Life of Jorge Martínez

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Wilkes Honors College, Florida Atlantic University

BLAST 2021
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While over his career he wrote over 110 published papers and supervised 7 Ph.D. students. His area of expertise is classified as Ordered Algebraic Structures.
Here is the list of his former PhD students.

David Kenoyer (1982)  
Robert T. Finn (1997)  
Chawne M. Kimber (1999)  
Scott D. Woodward (1992)  
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Mathematical Lineage.
Paul F. Conrad (1951), Reinhold Baer (1927), Hellmuth Kneser (1921),
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Mathematical Lineage.
Paul F. Conrad (1951), Reinhold Baer (1927), Hellmuth Kneser (1921), David Hilbert (1885)

Mathematical siblings:  
Here is a list of journals where his work appeared.

Trans. A.M.S.
Proc. A.M.S.
Journal of Algebra
Topology and its Applications
Pacific Journal of Mathematics
Indagationes Mathematicae
Algebra Universalis*
Canadian Journal of Mathematics
Journal of Pure and Applied Algebra
Czechoslovak Mathematical Journal
Acta Applicandae Mathematicae
Rendiconti del Seminario Matematico della Universit di Padova
Commentationes Mathematicae Universitatis Carolinae
Tatra Mountains Mathematical Publications

(*-served as editor)

A lattice-ordered group is a group $(G, +, 0)$ equipped with a lattice structure $(G, \lor, \land)$ such that for all $a, b, c \in G$ with $a \leq b$, $c \lor (a + c) \leq c + b$ and $a + c \leq b + c$.

We use $+$ even though groups are not assumed to be abelian. Jorge used to classify this as an example of a style of Conrad.

The most well-known examples of lattice-ordered groups: $\mathbb{R}$, Aut($\Omega$), $\mathbb{Q}$, $\mathbb{Z}$, $\mathbb{C}(X)$, $\mathbb{C}(X, \mathbb{Z})$, $\mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R} \times \mathbb{R}$, the group of divisibility of a (commutative) Bézout domain.
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c + a \leq c + b \quad \text{and} \quad a + c \leq b + c.
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A lattice-ordered group is a group \((G, +, 0)\) equipped with a lattice structure \((G, \vee, \wedge)\) such that for all \(a, b, c \in G\) with \(a \leq b\)

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The most well-known examples of lattice-ordered groups: \(\mathbb{R}, \text{Aut}(\Omega), \mathbb{Q}, \mathbb{Z}, C(X), C(X, \mathbb{Z}), \mathbb{R} \times \mathbb{R}, \mathbb{R} \times \mathbb{R}\), the group of divisibility of a (commutative) Bézout domain.
One of the most important objects in $\ell$-groups is the collection of its convex $\ell$-subgroups: a non-empty subset $H \subseteq G$ which is a sublattice, subgroup and has the property that if $h_1 \leq g \leq h_2$ and $h_1, h_2 \in H$, then so is $g$. 
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The collection of convex $\ell$-subgroups is denoted by $C(G)$. Early on, this collection was known to be a complete Brouwerian lattice. Nowadays, it is known as an example of an algebraic frame.
A frame is a complete lattice $L$ in which the following distributive law holds:

$$a \land \bigvee S = \bigvee \{a \land s : s \in S\},$$

for each $a \in L$ and $S \subseteq L$. 
Topics

Variety of \( \ell \)-groups

Radicals on \( \ell \)-groups

Torsion and quasi-torsion theories and classes of \( \ell \)-groups

Torsion products of \( \ell \)-groups

Free products of \( \ell \)-groups

Archimedean lattices
It was at this point in his career that Jorge took on the arduous role of Conference Organizer. This was a natural move. Others had been doing this as well. He was instrumental in setting up the Caribbean Mathematics Foundation. Conferences were held in Curaçao; the first in 1988. Working with Charles Holland and Kluwer Academic Publishers they produced several proceedings of these conferences on ℓ-groups as well as other areas of mathematics. Charles also was part of many other proceedings.
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In the mid 1990s, Jorge teamed up with Constantine Tsinakis to start the Consortium for Order in Algebra and Logic, a joint venture between Vanderbilt University and the University of Florida.
Now is a good time to mention that Jorge also wrote a novel by the title of *For the Fragments of Justice* (1989).
In this middle stage, Jorge’s work started to turn from $\ell$-groups to topics in ring theory with a focus on $f$-rings. He got into the “Dutch School” of mathematics. He met Tony Hager.
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**Topics**

- Rings of continuous functions: $C(X)$ and $C(X, \mathbb{Z})$
- Semiprime $f$-rings with bounded inversion
- Categorical questions on $f$-rings (e.g. pushouts, monoreflections)
- Bézout and Prüfer $f$-rings
- Ring of quotients and essential extensions
- Gabriel filters of ideals
- Tychonoff spaces
- Absolutes and Quasi $F$-covers of compact Hausdorff spaces
Jorge Martínez: the third stage (2002-2020)

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It was at this point in his career that Jorge had a command of several disparate areas of mathematics: $\ell$-groups, semiprime $f$-rings, rings of quotients of semiprime commutative rings, Tychonoff spaces and category theory. Specifically, his understanding of these areas was focused through objects like $C(G)$, $\text{Rad}(R)$, $dL$, and $zL$. 
Towards the end of his career Jorge was focusing his mathematical energy on generalizing the epicompletion (in W) to appropriate categories of algebraic frames.
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Jorge talked about this project whenever we would get together. He wrote 5 papers on the subject; the last of which left him, finally, a little bit settled.
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**Topics**

Archimedean frames

Yosida frames and finitely subfit frames

Dimension theory in frames

Conrad frames

Epicompleteness in (certain) categories of frames

Nuclei on frames, and the assembly of a frame
Top 7 Articles

Pictures

Stories
Martínez, Jorge; Zenk, Eric R. When an algebraic frame is regular. *Algebra Universalis* 50 (2003), no. 2, 231–257.


EXTENSIONS OF PARTIAL ORDERS ON GROUPS

A dissertation
Submitted on the eleventh day of July, 1969
to the Department of Mathematics
of the Graduate School
of Tulane University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
by

Jorge Martínez

Approved:

Paul F. Conrad, Chairman
The Life of Jorge Martínez
Ordered Algebraic Structures

The 1991 Conrad Conference

Edited by
J. MARTINEZ and C. HOLLAND

Ordered Algebraic Structures
Proceedings of the Curacao Conference,
Sponsored by the Caribbean Mathematics Foundation,
June 26-30, 1995

Edited by
W. CHARLES HOLLAND & JORGE MARTINEZ

KLUWER ACADEMIC PUBLISHERS
ORDERED ALGEBRAIC STRUCTURES

Edited by
Jorge Martínez

Kluwer Academic Publishers

Ordered Algebraic Structures

Proceedings of the Gainesville Conference
Sponsored by the University of Florida
28th February – 3rd March, 2001

Edited by
Jorge Martínez

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