

Plan of the activities “Visiting Professor 2019, University of Bari”

Visiting Professor: Prof. Marcelo Rempel Ebert, University of São Paulo (FFCLRP – USP)

The visit is operated in the framework of the exchange agreement between the School of Sciences and Technologies of University of Bari and the Faculty of Sciences, Literature and Philosophy of Ribeirão Preto, of University of São Paulo (FFCLRP – USP).

During his visit, Prof. Ebert will collaborate in the research activities with M. D’Abbicco and with the Ph.D students that he supervises, with particular interest in the study of critical exponents for nonlinear evolution equations with and without dissipative terms. Prof. Ebert will possibly give a research talk in December 2019. Also, he will meet and discuss with interested students of University of Bari, inviting them to visit the Faculty of Sciences, Literature and Philosophy of Ribeirão Preto, of University of São Paulo (FFCLRP – USP), in the framework of the aforementioned agreement.

Prof. Ebert will also deliver the following intensive course for Master and Ph.D. students.

Title of the course: Fourier Analysis and Applications to Evolutions and Parabolic PDE's

Schedule of the course: December, 2019

Program: The main goal of this course is to apply tools from harmonic analysis to study some important partial differential equations from mathematical physics.

Topics of the lectures:

1. Interpolation Theorem and Useful Inequalities
2. Basics for Partial Differential Equations
3. Phase Space Analysis for the Heat Equation
4. Phase Space Analysis and Smoothing for Schrödinger Equations
5. Phase Space Analysis for Wave Models
6. Phase Space Analysis for Plate Models
7. The Method of Stationary Phase and Applications
8. Applications to semilinear models

References:

M. R. Ebert and M. Reissig, *Methods for Partial Differential Equations: Qualitative properties of solutions, Phase Space Analysis, Semilinear Models*. Birkhäuser Basel, Cham, Switzerland, 2018.

E. M. Stein, *Singular Integrals and Differentiability Properties of Functions*. Princeton University Press, Princeton, NJ, 1970.