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An Afternoon in Honor to Mischa Cotlar

Department of Mathematics and Statistics
University of New Mexico
Albuquerque, NM
October 12, 2007
PROGRAM

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FRIDAY OCTOBER 12, 2007 - *DANE SMITH HALL* 125

2:00pm Cora Sadosky (Howard University, Washington, DC)
Remembering Mischa Cotlar

2:40pm Cora Sadosky (Howard University, Washington, DC)
"Abstract Scattering Systems: some surprising connections"
Abstract: Abstract scattering systems (a.s.s) lurk in different well-known theories. Here we review the connections Cotlar and I found between a.s.s. and the theory of the Hilbert transform in weighted L^p spaces and several variables, and of the liftings of invariant forms in Hilbertian scattering. Later on, together with J. Ball and V. Vinnikov, we explored the interactions between conservative linear systems and Lax-Philips scattering systems in dimension two. In particular we give a simple proof of Andö theorem asserting that any pair of commuting contractions has a joint unitary dilation.

3:30pm Sergei Treil (Brown University, Providence, RI)
"Two weight estimates for the Hilbert Transform and rank one perturbations of self-adjoint operators."
Abstract: The theory of singular integral operators, in particular, a theorem by Arocena - Cotlar - Sadosky about two weight estimates of Hilbert transform is applied to the investigation of delicate spectral properties in perturbation theory of self-adjoint operators. As an application new result about the absence of the embedded singular spectrum for rank one perturbations is obtained. (The talk is based on a joint work with C. Liaw.)

4:20pm *Coffee and cookies.*

4:30pm Carlos Berenstein (University of Maryland, College Park, MD)
"From electrical impedance tomography to network tomography."
Abstract: In 1938, Alberto P. Calderón, then an oil prospecting engineer for YPF, the argentinian government oil company, proposed to determine the depth profile of an oil field by detonating explosive charges just inside the surface at the field and measuring the time it takes for the corresponding perturbation to reach the surface. In other words, this is the input-output map for this detection problem. To be more precise, the input corresponds to the Neumann data of the boundary and the output to the Dirichlet data, which is exactly the kind of problems considered in this paper.

The continuity of this input-output map in different function spaces corresponds to questions about interpolation of linear operators, one of the many subjects studied by Cotlar and also subject of the MS thesis of the author at the university of Buenos Aires under the guidence of Mischa Cotlar. (This is joint work with Franklin Gavilánez.)

5:20pm Carlos Kenig (University of Chicago, Chicago, IL)
"Cotlar's lemma and its applications to pseudo-differential operators and partial differential equations."
Abstract: We will show how Cotlar's lemma was applied by Calderón-Vaillancourt (1971), to obtain the boundedness of "exotic pseudo-differential operators". This found some immediate, deep applications to pde. I will also show some more recent applications to Schrodinger equations and to the boundedness of even more "exotic" pseudo-differential operators, relevant to ultra-hyperbolic Schrodinger equations. (Joint work with G. Ponce, C. Rolvung and L. Vega.)

6:30pm *Reception Student Union Building.*

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Organizers:
Wilfredo Urbina (De Paul University/Univesidad Central de Venezuela)
Cristina Pereyra (UNM).