HEAT EQUATION AND LAYER POTENTIALS: OLD AND NEW RESULTS

PAOLO LUZZINI

Layer potentials are a powerful and versatile tool to analyze boundary value problems. They provide an integral representation of the solution and allow transforming the problem to an integral equation defined on the boundary so, in this way, one can take advantage of the theory of integral equations and operators. Also, casting the problem on the boundary reduces the dimension by one making the numerical computations faster.

While the elliptic framework is better understood, its parabolic counterpart remains somehow less investigated. In this talk I will first introduce the layer potentials associated with the heat operator and I will review some classical contributions. Then I will present some new results concerning the regularity of the integral operators associated with layer heat potentials and finally I will show a few application to boundary value problems.

Part of the results presented in the talk have been obtained in collaboration with Prof. Lanza de Cristoforis (Università degli Studi di Padova) and Prof. Dalla Riva (Università degli Studi di Palermo)

Università degli Studi di Padova
Email address: pluzzini@math.unipd.it