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SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 21 de Setembro (quinta-feira), às 13h30, sala 6.2.33

Positive powers of the Laplacian: from hypersingular integrals to boundary value problems

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Abstract: We revisit the classical concepts of Green Function and Poisson kernel for the Laplacian as a way of constructing explicit solutions to boundary value problems. We mention how these ideas extend to the polyharmonic operator and to the fractional Laplacian for powers $0 < s < 1$, where some similarities appear, but also surprising differences. Finally, we show that Green Functions, Poisson kernels, and other boundary kernels can be extended to find explicit solutions and representation formulas for any positive power of the Laplacian, including the higher-order regime, where the operator can be represented as a hypersingular integral with finite differences.

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