



UNIVERSIDADE FEDERAL DO PARANÁ - UFPR  
CENTRO POLITÉCNICO  
DEPARTAMENTO DE MATEMÁTICA

## Seminários Contínuos do Programa de Pós-Graduação em Matemática

14 de setembro de 2018 - 15:30 - Anfiteatro A (Bloco PC)

### Optimal inequalities and the Brezis-Nirenberg problem

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ABSTRACT. In this talk we will present a class of problems in PDE that are known in the literature as: critical problems. This type of problem gained notoriety in the decade 60 due to Yamabe's problem that was related to the Poincaré conjecture. We will present a little history of the critical problems, the difficulties in studying them and the important contribution due to Brezis and Nirenberg in the decade 80. The main tool used to study critical problems is the variational method, this method depends on Sobolev immersions. We will see that such immersions translate into inequalities and among the inequalities, there is a class called: optimal inequalities. Using optimal inequalities, Brezis and Nirenberg developed a technique for studying critical elliptic problems which are still widely used.