

Mathematics Graduate Seminar

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Thursday, November 10, 2016
1:00p.m., HH-3017

Variational Methods in Mathematical Physics

Abstract:

A typical problem in mathematical physics concerns finding sufficiently smooth solutions to a class of partial differential equations (Euler-Lagrange equations) satisfying certain boundary conditions. This can be shown to be equivalent to extremizing a functional by varying it over a class of admissible functions. Although smooth solutions may not exist to the original problem, the variational approach allows the formulation of a broader definition of 'solution'. In many situations, the latter can be shown to always exist. The talk will give an elementary introduction to these ideas and discuss some applications in Riemannian geometry.