Daniel Steenebrügge: Working towards a refined mountain pass theorem applicable to geometric energies.

Abstract: This talk concerns joint work in progress with Nicolas Freches and Heiko von der Mosel.

In geometric analysis, we often deal with reparametrization-invariant functionals on some function space. This invariance makes it impossible to prove the classical Palais-Smale condition (PS), meaning that the usual version of the mountain pass theorem need not hold. To overcome this problem, we define a modified Palais-Smale condition $(PS)_M$ on some good set of representatives and prove a fitting mountain pass theorem. We also give sufficient conditions for $(PS)_M$ and show that these are satisfied for some energies on curves.