1) Magnetic interpolation inequalities in dimensions 2 and 3 | María Jesús Esteban
In this talk I will introduce the question of which kind of functional inequalities one can have in the case of Schrödinger operators in the presence of an external magnetic field. The general case and the case of constant magnetic field will be the main topic in this talk. Information will be given about the best constants in the inequalities that I will discuss and there will be a discussion about the qualitative properties of the extremals for the inequalities.

2) Some results for functionals of Aharanov-Bohm type | Michael Loss
In this talk I present some variational problems of Aharanov-Bohm type, i.e., problems that include a magnetic flux that is entirely concentrated at a point. This is maybe the simplest example of a variational problems for systems, the wave function being necessarily complex. The functional is rotationally invariant. The issue to be discussed is whether the optimizers have this symmetry or whether it is broken. This issue is addressed by exploiting a connection with the sharp version of the Caffarelli-Kohn-Nirenberg inequalities.

3) Symmetry breaking in case of stability for the symmetric extremals | María Jesús Esteban
In this talk I will complement the talk of professor Michael Loss with examples of cases in which the extremal functions for some functional inequalities are stable, but despite this, we observe symmetry breaking for the global extremes; The mechanism for this symmetry breaking phenomenon will be shown in detail thanks to some numerical experiments.