

Self-dual variational calculus in PDE and mass transport

1. Classical convex variational problems and their Euler-Lagrange equations
2. Self-dual Lagrangians and monotone vector fields
3. Self-dual variational calculus for non Euler-Lagrange PDEs and parabolic equations driven by convex energies
4. Self-dual variational calculus, inverse problems and control theory
5. Self-dual variational calculus and homogenization
6. Anti-symmetric Hamiltonians and non-linear PDEs and evolution equations, including Navier-Stokes type equations
7. Anti-symmetric Hamiltonians and invariant mass transport problems
8. Non-convex selfdual variational calculus and Hamiltonian systems

Reference Books:

1. N. Ghoussoub: [*Self-dual Partial Differential Systems and Their Variational Principles*](#), Springer Monographs in Mathematics, Springer New York (2008)
2. I. Ekeland and R. Temam, *Convex Analysis and Variational Problems*. Classics Appl. Math. 28, SIAM, 1999.