

# Geometric Mechanics

- 1). What are the possible types of linear Hamiltonian systems with one degree of freedom? How do the corresponding Hamiltonian functions look like? Which of the occurring equilibria are structurally stable — and in what sense?
- 2). Classify all linear Hamiltonian systems in two degrees of freedom that have no multiple eigenvalues.  
*Hint:* consider the Hessian matrix  $D^2H_2$ .