Abstract

Abstract (joint work with Wifrid GANGBO and Olivier KNEUSS):

(I) Our first result concerns *Darboux theorem* (1882) the starting point in symplectic geometry. We discuss the existence, regularity and uniqueness of solutions, emphasizing the role of *ellipticity.*

(II) We then apply the above result to the so-called *symplectic factorization.*We show that any map φ, satisfying appropriate assumptions, can be written as

$$\varphi = \psi \circ \nabla x$$

where ψ preserves the standard symplectic form ω_m and ∇x is orthogonal to ω_m.

(III) The analogy with mass transportation and the Monge-Ampère equation, as well as with the polar factorization, will be emphasized.