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**Geometric charges in theories of elasticity and plasticity**

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The mechanics of many natural systems is governed by localized sources of stresses. Examples include "plastic events" that occur in amorphous solids under external stress, defects formation in crystalline material, and force-dipoles applied by cells adhered to an elastic substrate. Recent developments in a geometric formulation of elasticity theory paved the way for a unifying mathematical description of such singular sources of stress, as "elastic charges". In this talk I will review basic results in this emerging field, focusing on the geometry and mechanics of elastic charges in two-dimensional solid bodies. I will demonstrate the applicability of this new approach in three different problems: failure of an amorphous solid under load, mechanics of Kirigami, and wrinkle patterns in geometrically-incompatible elastic sheets.