1050-74-166 **Yury Grabovsky*** (yury@temple.edu), Temple University 038-16, Department of Mathematics, 1805 N Broad St, Philadelphia, PA 19122, and **Lev Truskinovsky** (trusk@lms.polytechnique.fr), Laboratoire de Mécanique des Solides, Route de Saclay, 91128 Palaiseau CEDEX, France. *On buckling instability in hyperelasticity.*

Buckling has been understood either as a bifurcation in dimensionally reduced models for rods and plates or exhibited explicitly for 3D non-linearly elastic bodies with simple geometry and constitutive law. We view buckling as a failure of second variation to stay positive for 3D slender bodies under compressive loading. The source of that behavior of second variation is the principle of objectivity that is also responsible for flip instability in a purely soft device. Buckling occurs when the stabilizing effect of energy convexity and mixed device loading expressed by the Korn constant is overcome by the destabilizing effect of the compressive loading. Our theory is largely independent of the precise details of geometry, loading or constitutive anisotropy and non-linearity. As such, it applies to complex geometries. (Received March 03, 2009)