

Title: A variational problem involving a polyconvex integrand (Joint work with R. Awi).

Abstract: This talk is a contribution to the study of the system of partial differential equations (PDEs) $\partial_t \mathbf{u} + \operatorname{div}(DW(\nabla \mathbf{u})) = 0$, which remains an outstanding open problem when W fails to be convex. We consider stored energy functionals arising in the study of Ogden material and which can be decomposed as $W(\xi) = f(\xi) + h(\det \xi)$. Here, $f \in C^1(\mathbb{R}^{d \times d})$ and $h \in C^2(0, \infty)$ are strictly convex functions such that $\lim_{t \rightarrow 0^+} h(t) = \lim_{t \rightarrow \infty} h(t)/t = \infty$. We study variational problems which we hope will lead to a better understanding of the above system of PDEs.