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Xiaobing Feng and **Stefan Schnake*** (schnake@math.utk.edu). *An enhanced finite element method for a class of variational problems exhibiting the Lavrentiev gap phenomenon.*

This talk concerns itself with numerical approximations to the minimizers of functionals that exhibit the Lavrentiev gap phenomenon - a defect from the singularities of said minimizers. This phenomenon arises in physical problems, especially ones from material science such as nonlinear elasticity and microstructure theory. Standard finite element discretizations applied to functionals with this phenomenon fail to approximate both the true minimizer and the minimum value of the integral. We introduce a simple and novel cutoff technique that allows the finite element method to converge to the true minimizer. Several numerical tests will be shown towards the end of the talk. (Received September 20, 2016)