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Regularity of $W^{2,2}$ convex manifolds and homogenization of bending theory of shells

We will show additionally regularity of intrinsically convex $W^{2,2}$ manifolds in R^3 and show application of this result in the derivation of the homogenized model of shells in the bending regime from 3d elasticity by means of Γ convergence. The result on additional regularity is also necessary for the derivation of the bending theory for shells when one assumes that the shell is not homogeneous in the direction of thickness. This is a joint work with Peter Hornung (TU Dresden).