

# UNIVERSALITY OF SINGULAR RENORMALISABLE HARMONIC MAPPINGS IN 2D

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We study the existence of harmonic mappings subject to a manifold constraint, which due to topological obstructions may be singular in two dimensions. Such mappings may be understood as a limit of approximate minimisation problems, with classical approaches involving the Ginzburg-Landau relaxation and  $p$ -harmonic mappings with  $p < 2$ . One may wonder whether this limit mapping is "universal;" for instance whether other approximations also give rise to the same singular limits. In this direction, we will consider general sequences of polar convex integrands  $f_n$  converging to  $|z|^2/2$  and analyse the asymptotic behaviour of minimisers as  $n \rightarrow \infty$ , showing they converge to singular renormalisable harmonic mappings in the limit. Our results recover known results in the  $p$ -harmonic setting, and also covers more general families, including linearly growing integrands of area-type. This is a joint work with Benoît Van Vaerenbergh (UC Louvain).