Optimal Design for mixtures of ferromagnetic interactions

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We present a general framework for the optimal design of surface energies on networks. We give sharp bounds for the homogenization of discrete systems describing mixtures of ferromagnetic interactions by constructing optimal microgeometries, and we show that there holds a localization principle which allows to reduce to the periodic setting in the general non-periodic case. Furthermore we discuss the issue of crystallinity of the homogenized energy densities of spin systems in the periodic setting. This is joint work, in progress, with Andrea Braides and Antonin Chambolle.