MINIMIZING INTERACTION ENERGIES

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I will start by reviewing some recent results on qualitative properties of local minimizers of the interaction energy to motivate the main topic of my talk: to discuss global minimizers. We will show the existence of compactly supported global miminizers under quite mild assumptions on the potential in the complementary set of classical H-stability in statistical mechanics. A strong connection with the classical obstacle problem appears very useful when the singularity is strong enough at zero. An approach from discrete to continuum is also quite nice under convexity assumptions on the potential. This is based on three preprints/works in preparation one together with F. Patacchini, J.A. Canizo, another one with M. Delgadino and A. Mellet, and finally with M. Chipot and Y. Huang.