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A variational problem for isometric embeddings into the Minkowski space

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I shall discuss a variational problem arising from the study of quasilocal energy in general relativity. Given a spacelike 2-surface in spacetime, the Euler–Lagrange equation for the quasilocal energy is the isometric embedding equation into the Minkowski space coupled with a fourth order nonlinear elliptic equation for the time function. This equation is important in that it gives the ground configuration in GR.

In joint work with PoNing Chen and Shing-Tung Yau, we solved this system in the cases of large and small sphere limits.

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