1016-35-208 **Baisheng Yan*** (yan@math.msu.edu), A-215 Wells Hall, Department of Mathematics, Michigan State University, East Lansing, MI 48824. *Minimizing a special non-convex functional related to isometric embedding and dimension reduction.*

We study the functional

$$I(u) = \int_S \left(|u_{x_1}|^2 + |u_{x_2}|^2 + \frac{1}{|u_{x_1} \times u_{x_2}|^2} \right)^{p/2} dx,$$

where S is a bounded domain in $\mathbf{R}^2$ and $u : S \to \mathbf{R}^3$, $p \geq 2$. The absolute minimizers of I are the isometric embeddings of S into $\mathbf{R}^3$. This functional also appears in the reduction from 3-D incompressible p-th power energy to 2-D compressible energy using the Γ-convergence. The main purpose of this talk is to present a precise result on the relaxation of this energy functional and to explicitly give the formula of infimum energy for any given linear boundary data. The key ingredients are the Morrey quasiconvexity and some technique of convex integration. (Received February 13, 2006)