Degenerate and Singular Fractional Equations and Optimally Embedded Submanifolds

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Over the past three decades, a variety of energy functionals have been developed and analyzed to address the problem of finding optimal embeddings of curves, links, and higher-dimensional submanifolds into Euclidean space. The associated Euler-Lagrange equations give rise to a rich class of geometric nonlocal differential equations, encompassing degenerate elliptic, singular, critical, and subcritical types. In this talk, we will provide a concise overview of the state of the art in this field, highlighting key results, challenges, and open questions.