

# Min-Max construction for free boundary minimal disks

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We will discuss the existence of minimal disks into a Riemannian manifold having a boundary lying on a specified embedded submanifold and that meet the submanifold orthogonally along the boundary. A general existence result has been obtained by A. Fraser. We will explain how it is possible to adapt the very different ideas of Colding and Minicozzi inspired by the replacement method of Birkhoff for the existence of geodesics in order to give energy identities that include bubbles, so that the so-called min-max "width" is realized. We will also focus on a new proof for the necessary energy convexity property. This is a joint work with P. Laurain.