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Ibrahim Unal* (iunal@metu.edu.tr), Middle East Technical University, Department of Mathematics, Cankaya, 06800 Ankara, Turkey. *Gauss Maps of Embeddings into Calibrated Manifolds and the h-Principle.*

Introduction of potential theory on calibrated manifolds by Harvey and Lawson has brought many techniques and tools to understand the geometry of these special manifolds. One of these is the notion of ϕ -free submanifolds. These submanifolds are analogues of totally real submanifolds in complex geometry and play a similar role to construct ϕ -convex domains in a calibrated manifold with calibration ϕ . By studying the Gauss maps of embeddings into calibrated manifolds with special holonomy, we get important results about the topology of ϕ -free submanifolds, especially in G_2 -geometry. Moreover, we prove that the h-principle holds for ϕ -free embeddings for coassociative calibration in \mathbb{R}^7 , for Cayley calibration in \mathbb{R}^8 and for quaternionic calibration in \mathbb{H}^n .

In this talk, after a quick introduction to calibrated manifolds, I will talk about the recent results about the geometry of ϕ -free submanifolds of G_2 and $Spin(7)$ -manifolds. (Received September 20, 2016)