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Frank Morgan* (Frank.Morgan@williams.edu). *Isoperimetric Problems with Density*. Preliminary report.

A round sphere provides the least-perimeter way to enclose given volume in Euclidean space. What happens if you put a positive density on the space that weights both perimeter and volume, as used in Perelman's proof of the Poincare' Conjecture? We discuss some recent results and open questions. (Received August 31, 2010)