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Frank Morgan* (fmorgan@williams.edu). *The Isoperimetric Problem with Density.*

The classical isoperimetric theorem says that the round sphere is the least-perimeter way to enclose given volume in R^n . Since their appearance in Perelman's proof of the Poincare conjecture, there has been great interest in enhancing space with a positive density that weights both perimeter and volume. Even if the density is radial, spheres about the origin usually no longer minimize weighted perimeter for given weighted volume. We discuss some open problems and recent results using geometric measure theory, some by undergraduates. (Received February 21, 2017)