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David Hartenstine*, Department of Mathematics, Western Washington University, Bellingham, WA 98225-9063. *On Brunn-Minkowski-type Inequalities Related to Partial Differential Equations*. Preliminary report.

The Brunn-Minkowski inequality plays a significant role in geometry and is related to many of the most important and powerful inequalities in geometry and analysis. Over the past 30 years, several Brunn-Minkowski-type inequalities related to partial differential equations have been established. For example, the principal eigenvalue for the Dirichlet problem for the Laplacian satisfies such an inequality (proved by Brascamp and Lieb in 1976). In this talk, I will discuss recent results in this area, and open problems and approaches to their solution. (Received August 13, 2006)