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Omer Bobrowski and **Matthew Strom Borman*** (borman@math.uchicago.edu). *Euler integration of Gaussian random fields and persistent homology.*

In this talk I will present a simple formula for the expected Euler integral of a Gaussian random field and related expectations, which are derived from the Gaussian kinematic formula. Using the relationship between the Euler integral and persistent homology, this amounts to an explicitly computable mean of a quantitative descriptor for the persistent homology of a Gaussian random field. (Received September 02, 2012)