

# IP/DIFFERENTIAL GEOMETRY/PDE SEMINAR

MONDAY, NOVEMBER 26, 2012

LOW 111

4PM–5PM

On graph approximations in Riemannian geometry

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Traditionally, discretization in Riemannian geometry was associated with polyhedral approximations. It seems clear now, due to works of Cheeger, Petrunin, Panov and many others that in dimensions beyond two or maybe three polyhedral structures are too rigid and cannot serve as discrete models of Riemannian spaces. Of course, there are various finite element methods, they do help to solve PDEs but they seem to be just numerical methods not helping us to understand underlying geometry and make models. They also seem to be confined to regions in Euclidean spaces. In this talk, we will discuss approximating Riemannian manifolds by graphs, of course with additional structures attached to them and with various boundedness conditions. We will mainly discuss metric aspect of the problem. This is a joint work with S. Ivanov. As for approximating PDE, including a comparison of spectral characteristics of the graph and smooth Laplacians, I would probably have time to only announce the main results. The latter are joint with S. Ivanov and S. Kurylev.

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, [www.math.washington.edu](http://www.math.washington.edu), follow the link **Seminars, Colloquia, and Conferences**).

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