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Applications of the 8-parameter Fisher-Bingham distribution on the sphere[1] TIANLU YUAN, University of Wisconsin - Madison — The Fisher-Bingham distribution (FB_8) is an eight-parameter family of probability density functions (PDF) on the unit sphere that, under certain conditions, reduce to spherical analogues of bivariate normal PDFs. Due to difficulties in its interpretation and estimation, applications have been mainly restricted to subclasses of FB_8, such as the Kent (FB_5) or von Mises-Fisher (vMF) distributions. However, these subclasses often do not adequately describe directional data that are not symmetric along great circles. In this talk I will outline a series calculation of the FB_8 normalization constant, which allows for some speed improvements. I will then discuss some applications for directional reconstruction in IceCube.

Tianlu Yuan
University of Wisconsin - Madison

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