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Azimuthally-sensitive femtoscopy: an excitation function worth pursuing

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The reaction plane-dependence of pion HBT correlations has been measured at the AGS, SPS and RHIC facilities. Though very few data points exist over this two orders of magnitude in energy, an intriguing behaviour is observed. In particular, contrary to generic expectations of a monotonic
energy dependence of the freezeout anisotropy, a “step” or perhaps even a dip-like behaviour appears. We will speculate on the possible implications of this observation and discuss plans at RHIC to more fully explore the energy landscape over the next few years. We will also present transport calculations showing strong sensitivity of the excitation function to the underlying physics, including a sensitivity
to the onset of a first order phase transition at lower energies.

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