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Detailed characterization of a five-dimensional phase space distribution

Wednesday, 10 May 2023 16:30 (2 hours)

We image the five-dimensional phase space distribution of a hadron beam in unprecedented detail. The resolution and dynamic range of the measurement are sufficient to resolve sharp, high-dimensional features in low-density regions of phase space. We develop several visualization techniques, including non-planar slicing, to facilitate the identification and analysis of such features. We use these techniques to examine the transverse dependence of longitudinal hollowing and the longitudinal dependence of transverse hollowing in the distribution. Our results strengthen the claim that low-dimensional projections do not adequately characterize high-dimensional phase space distributions.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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