



Contribution ID: 219 Contribution code: TUP51

Type: **Poster Presentation**

Maximum entropy tomography of 4D transverse phase space distributions using 2D measurement results

Tuesday, 10 September 2024 16:00 (1h 30m)

Obtaining the complete distribution of a beam in high-dimensional phase space is crucial for predicting and controlling beam evolution. Based on the theory of maximum entropy tomography, we developed an algorithm for reconstructing the four-dimensional (4D) transverse phase space distribution. Our algorithm can take any number of 2D linear projections as constraints, and iteratively converges to the unique numerical solution which is the maximum-entropy distribution satisfying the constraints. Having verified the algorithm with simulation experiments, we plan to use it to conduct 4D phase space tomography in the MEBT and HEBT of the heavy ion linac CAFe II.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

Primary author: LIU, Liwen (Institute of Modern Physics, Chinese Academy of Sciences)

Co-authors: WANG, Zhijun (Institute of Modern Physics, Chinese Academy of Sciences); WONG, Chun Yan Jonathan (Institute of Modern Physics, Chinese Academy of Sciences); DU, Yu (Institute of Modern Physics, Chinese Academy of Sciences)

Presenter: LIU, Liwen (Institute of Modern Physics, Chinese Academy of Sciences)

Session Classification: TUP: Tuesday Poster Session

Track Classification: MC4: Transverse Profile and Emittance Monitors