Contribution ID: **31**　　　　　　　　　　　　　　　　　　　　　　　Type: **Talk**

RL for beam phase space distribution tuning at LCLS

Friday, April 4, 2025 11:50 AM (20 minutes)

Beams at LCLS require precise shaping in position-momentum phase space to meet the needs of different users. In particular, the shape of the longitudinal phase space needs to be customized, while ensuring the transverse phase space meets the requirements for Free Electron Laser (FEL) lasing. We present results of using RL for longitudinal phase space shaping, and compare these with approaches using Bayesian optimization. We also present results on combining longitudinal phase space shaping with transverse phase space control.

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Session Classification: Talks