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Developments of PAnTHer: 2D and 3D web maps

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PAnTHer (Particle Accelerator on THree.js) is an innovative visualization tool designed to create interactive 2D and 3D maps for particle accelerators, leveraging advanced web and touch technologies. These dynamic maps are seamlessly integrated with real-time data sourced from accelerator control systems, simulation outputs, and an external component database.

The mapping process utilizes a JSON-formatted lattice file, which can be generated on-the-fly by extracting essential parameters from a simulator device server.

This allows for instantaneous presentation to remote users, complete with visualizations of particle trajectories at refresh rates of up to 25 frames per second.

To ensure efficient and secure data delivery, we have implemented several techniques that facilitate access for external users while maintaining data integrity.

The 3D visualization component was specifically developed to strike an optimal balance between visual fidelity and performance, enhancing the user experience in exploring complex accelerator environments.

This presentation will detail the architecture, functionality, and performance metrics of PAnTHer, highlighting its potential applications in accelerator physics and education.

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Footnotes

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