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- graduated in accelerator physics
- doctoral student at TU Darmstadt

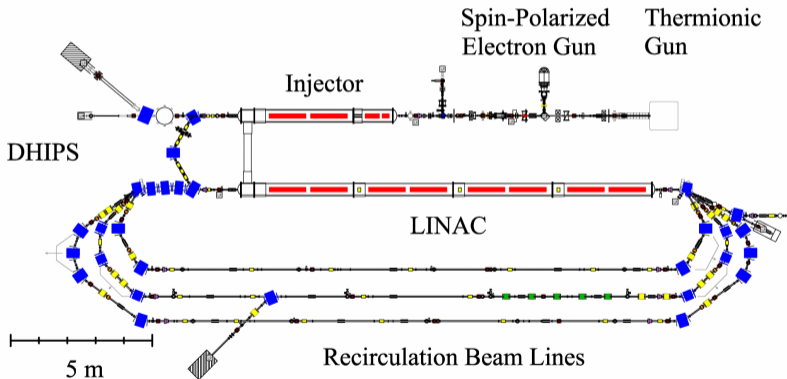


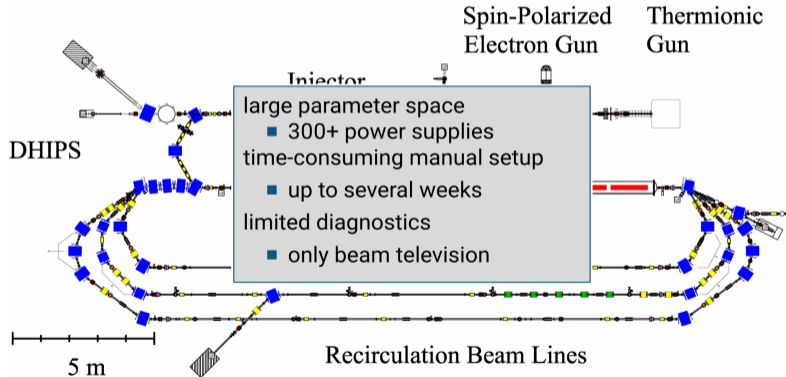
Involvement in RL

- B.Sc. thesis at S-DALINAC / TU-Darmstadt
 - applied to beam focusing and steering in transfer line

Interested in

- Setup & continuous control with RL
- Multi-turn injection into synchrotron
- Identification of magnetic field errors



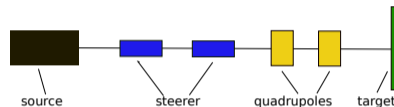


Goal

- steer beam to center of target, minimize beam spot

Task

- continuous state space
 - ▣ magnet currents
 - ▣ location beam spot / rms-size
- continuous action space
 - ▣ adjust magnet current



- position and slope of beam randomly initialized
- 6 degrees of freedom
- reward
 - ▣ + beam spot moved towards target center
 - ▣ + reduction of rms-size
 - ▣ - constant penalty per step

Implemented algorithms

- Deep-Q-Networks (DQN)
- REINFORCE
- Advantage-Actor-Critic (A2C)

