Optimizing the πE5-beamline at PSI for PIONEER

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Surrogate Model Construction

- use existing NN (Juknevicius Pranas)

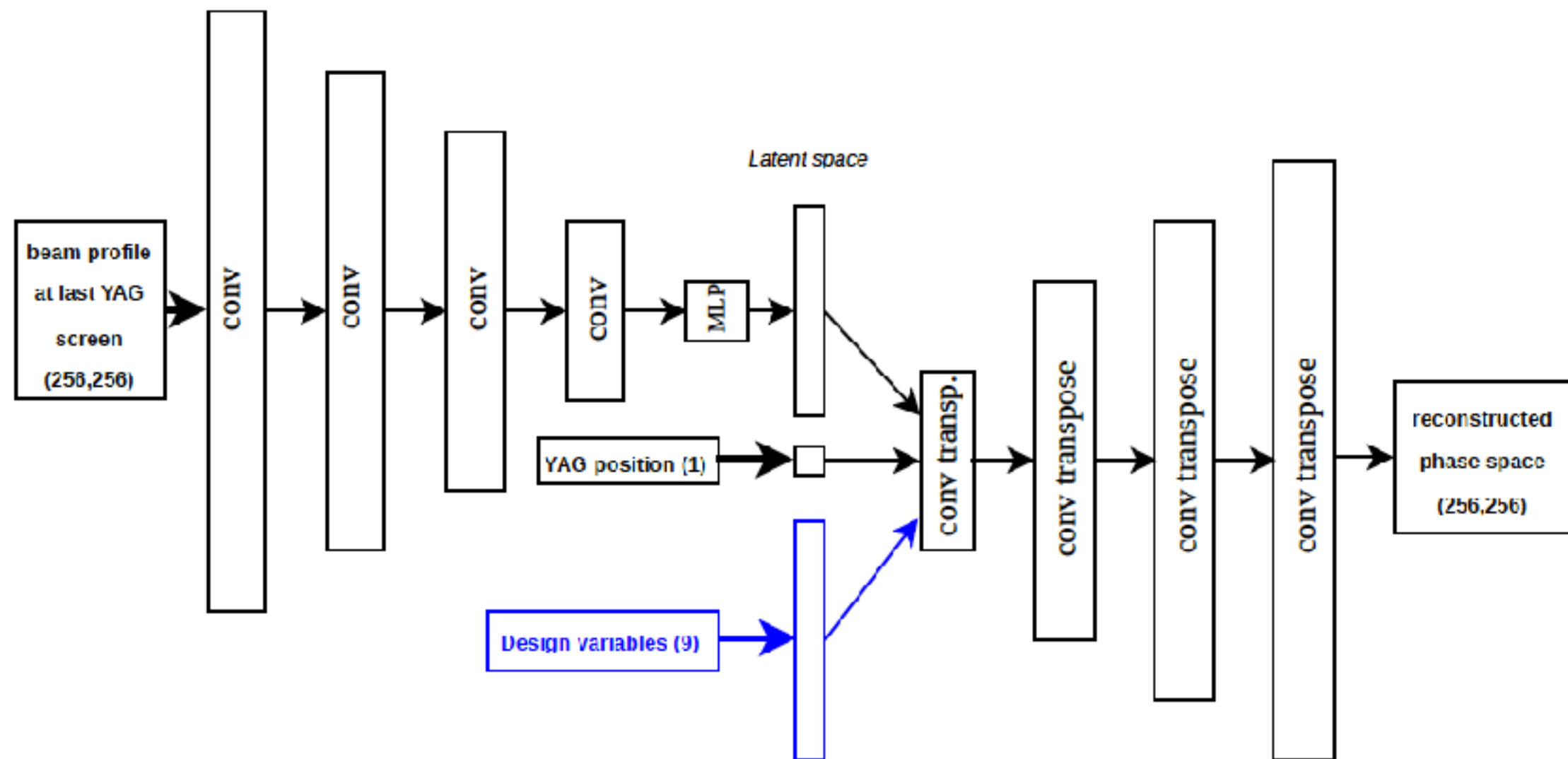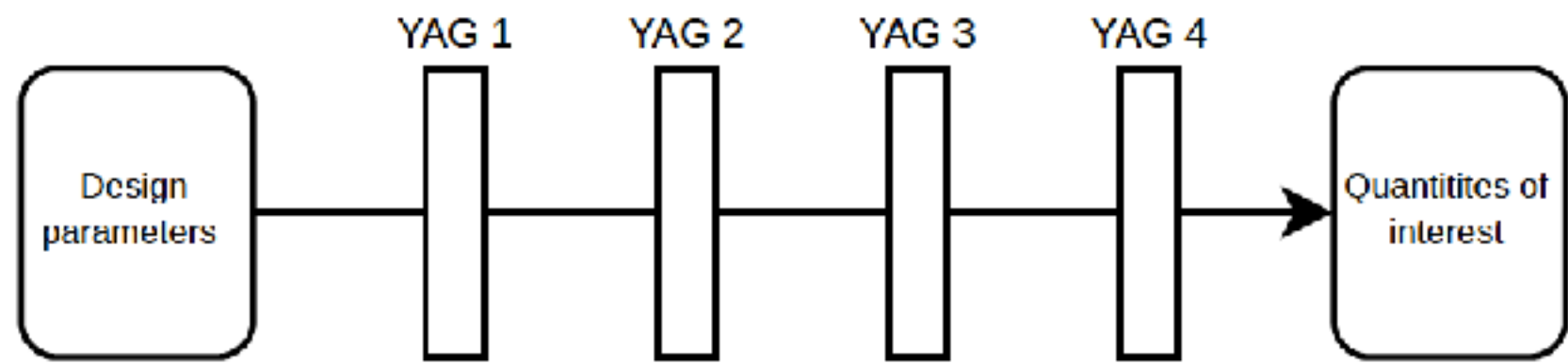- benchmarked on AWA linac

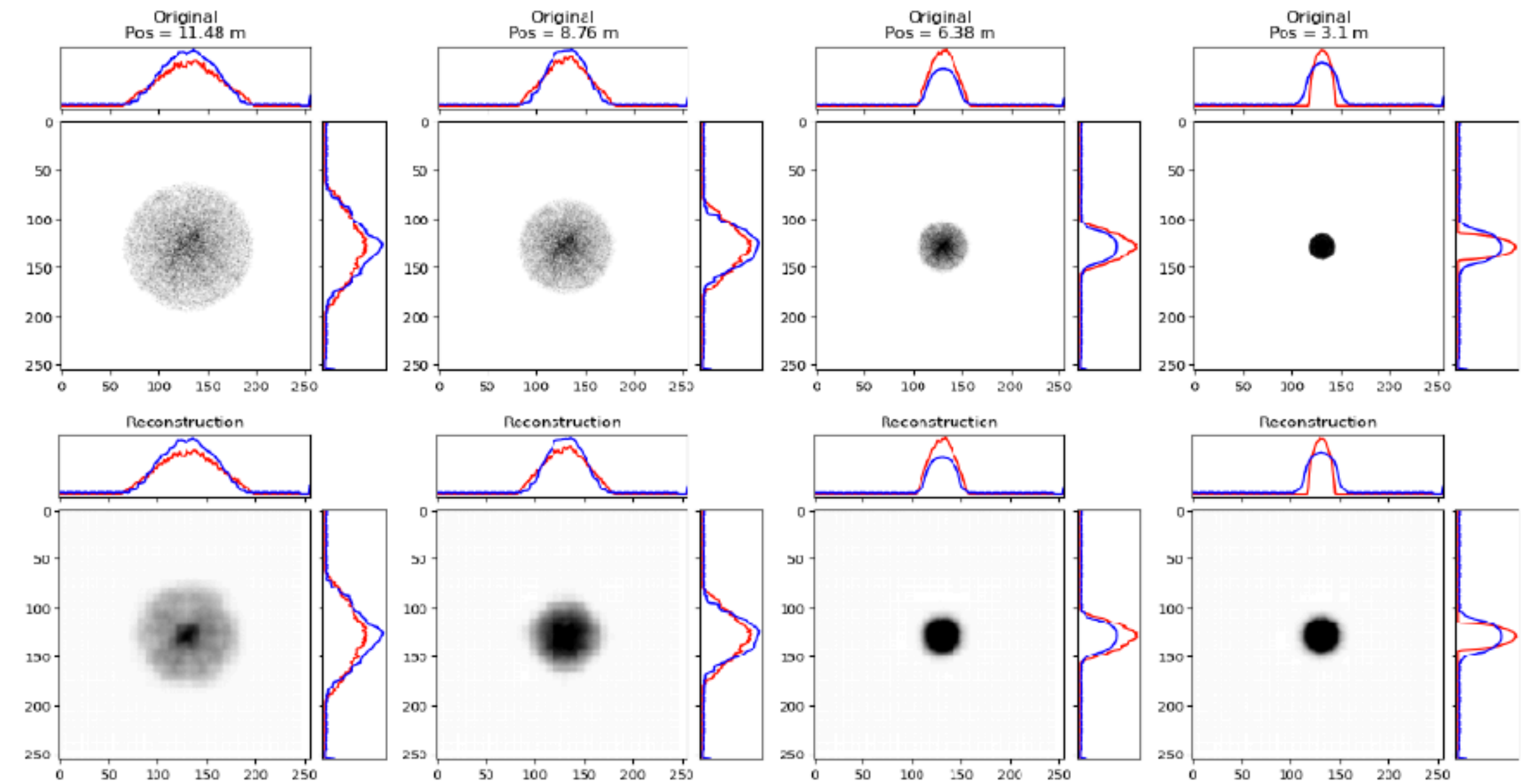- adapt to PIONEER G4BL model of Urs

Figure 7: Beam profile reconstructions at YAG screens positions. The side plots are normalized intensities in arbitrary units. Blue line is the intensity of the OPAL simulated beam profile, and red line is the intensity of the reconstructed beam profile.

Figure 6: Architecture of the autoencoder based neural network for beam profile or phase space reconstruction.

Status: Paul is

- getting familiar with G4BL

- about to start with the real simulations

- first goal: surrogate without pion decay