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Perceiver model for particle tracking in SPD experiment

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Particle tracking is critical in high-energy physics experiments, but traditional methods like the Kalman filter cannot handle the massive amounts of data generated by modern experiments. This is where deep learning comes in, providing a significant boost in efficiency and tracking accuracy.

A new experiment called the SPD is planned for the NICA collider, which is currently under construction at JINR. The SPD is expected to generate enormous amounts of data at 20 GB/s or 200 PB/year, so researchers are exploring the use of transformer-based architectures like the Perceiver for tracking. By leveraging the attention mechanism to incorporate particle interactions, the Perceiver shows tremendous potential for tracking in high-luminosity experiments like SPD.

Summary

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