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Learning powerful jet representations via self-supervision

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We propose a new approach to learning powerful jet representations directly from unlabelled data. The method employs a Particle Transformer to predict masked particle representations in a latent space, overcoming the need for discrete tokenization and enabling it to extend to arbitrary input features beyond the Lorentz four-vectors. We demonstrate the effectiveness and flexibility of this method in several downstream tasks, including jet tagging and anomaly detection. Our approach provides a new path to a foundation model for particle physics.

Track

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