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ARTIFICIAL INTELLIGENCE APPLIED TO PLASMA SPECTROSCOPY

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Artificial intelligence is now deeply integrated across nearly all fields including plasma physics [1, 2, 3] and more generally plasma science [4]. The field of plasma spectroscopy is no exception and there are many examples witnessing the evolution of this scientific practices. The integration of machine or deep learning methods (ML/DL) in plasma spectroscopy may have various purposes including real-time inference of plasma dynamics in magnetic fusion devices or the prediction of the plasma parameters [5]. In this paper, I will present a short review of the various applications of machine-learning and deep-learning algorithms in the field of plasma spectroscopy with a focus on magnetic fusion plasmas. I will also report on our own work related to the use of neural networks such as Convolutional Neural Networks to theoretical Balmer-α line spectra emitted by hydrogen isotopes for the hydrogen isotopic ratio prediction for Tokamak plasmas [6].

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