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## **Keynote 3: Strong Gravitational Lensing and Machine Learning in the Era of Large Sky Surveys**

*Monday, 30 November 2020 16:30 (1 hour)*

Machine learning methods have seen a rapid expansion in applications to various fields of astrophysics in recent years. In this talk, I will discuss our results on using deep convolutional neural networks to estimate the parameters of strong gravitational lenses from telescope data. Estimating these parameters with traditional maximum-likelihood modeling methods is a time- and resource-consuming procedure, involving several data preparation steps and a difficult optimization process. I will discuss how, using deep convolutional networks, we are able to estimate these parameters and their uncertainties 10 million times faster than with traditional methods, with a similar accuracy. With the advent of large volumes of data from upcoming ground and space surveys and the remarkable speed offered by these networks, deep learning promises to become an indispensable tool for the analysis of large survey data.

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