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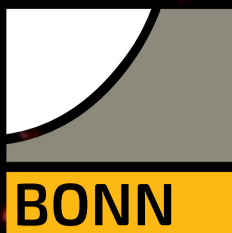
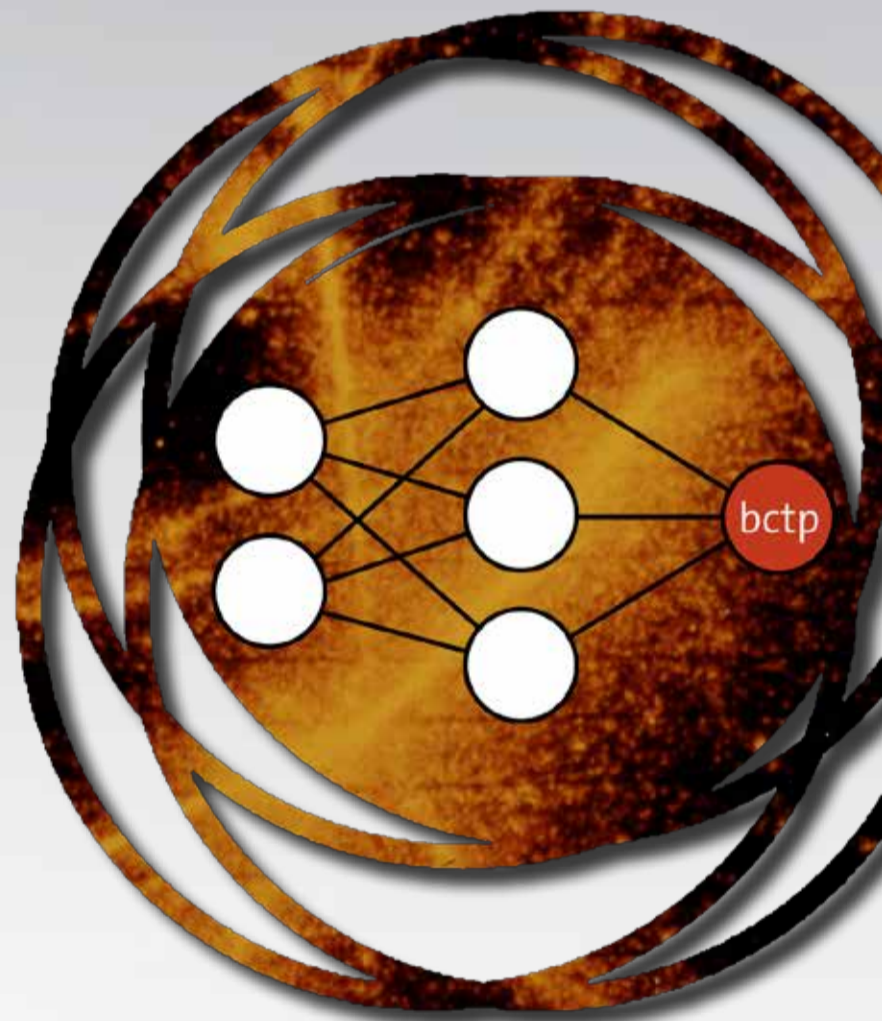**bctp** Bethe Center for Theoretical Physics

Bethe Forum

Lecture Series on

Machine Learning and its Applications

October 7 - 11, 2019
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Machine Learning techniques, in particular neural networks, have become an integral part of our lives. Due to their versatile nature, they are applied in the private and academic sector with tremendous success. In these lectures, I will first review the basic building blocks of neural networks and how they are trained. I will then discuss popular neural network architectures and how they are used in unsupervised, semi-supervised, and supervised machine learning. I will also introduce other common machine learning techniques and present example applications to problems in Physics (ranging from Astrophysics and Cosmology to Particle Physics, Mathematical Physics and String Theory). In the exercises, I will use the techniques introduced in the lectures to solve simple problems in real time.

Fabian Rühle
CERN, Geneva

Bethe Center for Theoretical Physics
Physikalisches Institut
Universität Bonn
Nußallee 12
53115 Bonn
Phone: (+49) 228 / 73 3770
e-mail: bethe-forum@uni-bonn.de
http://bctp.uni-bonn.de

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