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**Bamdad Hosseini\*** ([bamdadh@caltech.edu](mailto:bamdadh@caltech.edu)), 1200 E California Blvd, MC 305-16, Pasadena, CA 91125. *Model reduction and neural networks for parametric PDEs*. Preliminary report.

I will discuss some ideas at the intersection of machine learning and uncertainty quantification with a particular focus on data-driven methods that do not require explicit knowledge of processes that generate the data. In particular we focus on supervised learning on Banach spaces for emulation of parametric PDE models and outline a method that combines principal component analysis with neural network regression for mesh-independent approximation of PDE solutions. Our method is supported by theoretical analysis and numerical experiments that elucidate the flexibility and mesh independence of our method. (Received September 01, 2020)