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Generative AI for the statistical computation of fluids

In recent years, there has been growing interest in the use of neural networks for the data-driven approximation of PDE solution operators. This talk will focus on a recent application of neural networks to the statistical computation of fluid flows. In this application, the choice of training objective is observed to lead to stark differences in the empirically achieved results. I will argue that implicit constraints, related to limitations of what is practically achievable by deep learning, could provide a theoretical explanation of these observations.