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Understanding gradients of Deep Learning based parameter estimations of binary black hole signals

To estimate the source parameters of a gravitational wave signal from measured strain data, two primary methods are used: Bayesian Inference and Deep Learning. Bayesian Inference provides reliable results but demands significantly more computational resources compared to Deep Learning methods. Thanks to their efficiency, normalizing flows have gained popularity in recent years and are expected to play a key role in data analysis for the Einstein Telescope.
However, the "black box" nature of Deep Learning makes it challenging to interpret the estimations. To gain insight into what influences the estimations, we analyze the gradients within the neural network and visualize them.

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