

# Learning-based representation of gravitational wave signals for LISA data analysis

*mardi 12 octobre 2021 14:15 (15 minutes)*

We investigate a new method for the fast recovery of gravitational wave (GW) signals drowned in noise relevant to LISA physics. For that purpose, we describe an original learning based non-parametric reconstruction of the imprint of GW sources in measurements affected by instrumental noise. We evaluate its performances on the case of galactic binary (GB) signals.

The proposed approach builds upon a projection of the interferometric measurements on a manifold of plausible signals. This manifold encodes an adapted representation of GB waveforms, which is learnt with a manifold-learning algorithm coined Interpolatory Auto Encoder.

We will explain the concept of the algorithm and show promising preliminary applications on single binary sources.

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**Classification de Session:** Groupe de Travail: Méthodes d'analyse des données