

# **JAX-LPT: differentiable Lagrangian Perturbation Theory simulator**

*mardi 6 juin 2023 16:10 (20 minutes)*

This talk introduces JAX-LPT: a novel code implementing fast, GPU-compatible, and differentiable simulations based on first and second-order Lagrangian Perturbation Theory. JAX-LPT can facilitate the swift generation of initial conditions for N-body simulations and integrate effectively within Bayesian hierarchical models for field-level inference, contributing to a community-wide effort to develop a new generation of differentiable numerical tools for complex statistical inference problems (e.g. pmwd, JaxPM). The session will unpack the code's design and implementation, showcase basic utilization, and preview current and potential deployments in a few research projects.

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**Classification de Session:** Contributions