Postdoc proposal

In this postdoc proposal, I suggest to study weak turbulence phenomena in general relativity.

In [1], with Annalaura Stingo and Arthur Touati, we studied a system of coupled Klein—Gordon equations and proved local well-posedness for large times when the initial datum is random and well-prepared. We also derived an effective equation for the dynamics of correlations of waves at the first time when a generically non trivial dynamics occurs. This dynamics is not kinetic, there is an obstruction to a kinetic regime in this context.

With this postdoc proposal, I suggest one could explore other models, notably wave equations with null structure or quasi-linear equations. One could also derive from this system of Klein—Gordon equations a kinetic equation when the framework is favorable: for instance, when specific nonlinearities trigger a trivial effective dynamics at our timescale.

Applications from PhDs from various domains would be appreciated, more specifically:
- PhDs in dispersive equations;
- PhDs in kinetic equations;
- PhDs in Sctochastic PDEs;
- Etc …

I am well aware of gender bias in the mathematical community; I do my utmost to fight my own bias when evaluating applications. This applies to deciding whether to support or not an application to this postdoc proposal.

Please feel free to contact me if you have any question:
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To increase the odds of a quick reply, please write ‘'postdoc’’ in the subject of your message, attach a CV and mention the name of your current advisor (if you have one) in your message body.

[1] Anne-Sophie de Suzzoni, Annalaura Stingo and Arthur Touati, Wave turbulence for a semilinear Klein-Gordon system, arXiv e-prints arXiv:2503.24222