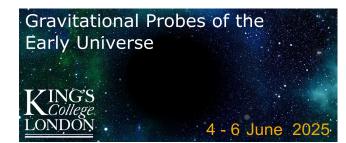
**Gravitational Probes of the Early Universe** 



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## Open effective field theories for primordial gravitational waves

Friction and noise naturally emerge when gravitational waves propagate through unknown environments. In this talk, I will present a framework that extends effective field theories to systematically incorporate these effects. I will show how fundamental principles —such as symmetries, locality, and unitarity —place constraints on the form of dissipation and noise. Finally, I will discuss the phenomenological consequences for the tensor sector of the early universe, emphasizing potential observational signatures of these effects.

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