

# Panel Discussion “Auditing Asymptotic Safety”

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- my perspective: research program on Quantum Gravity from non-perturbative lattice methods (“Causal Dynamical Triangulations”)
- Asymptotic Safety (via FRG): QFT framework, with computational tools and potential to describe NP physics in a Planckian regime
- How does AS address/shed light on/resolve big “structural issues”: dynamical nature of spacetime, diffeomorphism invariance and background independence, their compatibility with regularization/renormalization, relation between Euclidean and (physical) Lorentzian signature, conformal divergence, ... ?
- In AS, can one identify and compute (new) diffeomorph.-invariant observables beyond perturbation theory in full quantum gravity?

- comparing candidate theories of QG is important but hard: we must compare outcomes/observables rather than properties of the formalisms, which may not have a (obvious) physical correlate
- AS community has different schools of thought, using a variety of tools/formalisms/truncations, how to deal with gauge issues, etc.: are differences “merely” technical or more fundamental? On results: what version of AS? which assumptions? how robust?
- illuminating for outsiders: Donoghue’s “critique” [arXiv:1911.02967](https://arxiv.org/abs/1911.02967) and community answer by Bonanno et al [arXiv:2004.06810](https://arxiv.org/abs/2004.06810)

### **My wishlist:**

- (i) consolidate/optimize how you handle the main structural and technical issues in AS, and then
- (ii) give us more (cosmological/global) observables for use in the UV regime, starting with pure gravity!