Contribution ID: **413** Type: **Invited talk in a parallel session**

# Fluctuations and Correlations in Causal Set Theory

We study the statistical fluctuations (such as the variance) of causal set quantities, with particular focus on the causal set action. To facilitate calculating such fluctuations, we develop tools to account for correlations between causal intervals with different cardinalities. We present a convenient decomposition of the fluctuations of the causal set action into contributions that depend on different kinds of correlations. This decomposition can be used in causal sets approximated by any spacetime manifold M. Our work paves the way for investigating a number of interesting discreteness effects, such as certain aspects of the Everpresent $\Lambda$ cosmological model.

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**Session Classification:** Causal set theory

**Track Classification:** Quantum Gravity (QG): Causal set theory