

University of Wisconsin-Milwaukee

**Dept. of Physics  
COLLOQUIUM**

*Quantum Universe*

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**Friday, 25 October 2019  
3:30 PM**

**Lapham Hall – Room 160**

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Observations show the cosmos to be astonishingly simple, and yet deeply puzzling, on the largest accessible scales. How did everything we see emerge from a singular “point” in the past? Why is there a cosmological constant (or dark energy) and what fixes its value? What caused the density variations which seeded the formation of galaxies? All these questions involve the interplay between quantum mechanics and spacetime. New ideas and mathematical techniques for studying quantum dynamics are allowing us to identify problems with existing cosmological models and to explore new explanations. The CPT symmetric universe, in particular, offers a surprisingly simple explanation for the cosmological dark matter. The same calculational techniques have wide application in various fields, including radioastronomy, where there are prospects of using the whole universe as a fundamental physics laboratory of unequalled range and precision.

