



# QUANTUM RAYCHAUDHURI EQUATION: IMPLICATIONS FOR SPACETIME SINGULARITIES AND THE QUANTUM ORIGIN OF LAMBDA



Professor

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PAMU Seminar Hall  
03:00 PM

*Everyone is invited to  
attend*

## ABSTRACT

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The Raychaudhuri equation predicts the convergence of geodesics and gives rise to the singularity theorems. The quantum Raychaudhuri equation (QRE), on the other hand, shows that quantal trajectories, the quantum equivalent of geodesics, do not converge and are not associated with any singularity theorems. Furthermore, the QRE gives rise to the quantum corrected Friedmann equation. The quantum correction is dependent on the wavefunction of the perfect fluid whose pressure and density enter the Friedmann equation. We show that for a suitable choice of the wavefunction this term can give rise to a small positive cosmological constant, just as observed in nature. We discuss implications.



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Head, PAMU