

**The Department of Mathematics, Statistics and Computer Science
St. Francis Xavier University**

presents

Exact Evolution of Discrete Relativistic Cosmological Models

by

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Thursday, October 15th @ 4:00pm, Annex 23A

The talk addresses the open question of providing a theoretical cosmological model accounting for the observed accelerated expansion of the Universe within the framework of General Relativity. An inhomogeneous cosmological modeling of the mass content of the Universe in terms of a family of discrete mass sources (Schwarzschild black hole) is considered. The Einstein equations in vacuum are solved analytically along networks of lines exhibiting local rotational symmetry. It is shown that the deceleration parameter can be negative without invoking the existence of any exotic fluid permeating our Universe. The role of the small scale inhomogeneities on the large scale expansion of the Universe is studied in a fully non-perturbative relativistic way thanks to the discrete symmetries of the model.