Additional Reading Courses PMSc (Theory) Semester-2 (2019-20)

Note: These are FULL credit courses and would run during the 2nd semester, in parallel with the class-room lecture courses. The interested students may contact the course instructor and get themselves registered. (The routine will be fixed by the instructor.)

Two Reading Courses are:--

Title-1 : Aspects of Quantum information and dynamics
 (Instructor: Prof. Kumar S. Gupta)

Syllabus: Basic ideas of qubit, Bloch sphere
representation, Density matrix, Partial trace,
Partial transpose, Reduced density matrix,
Entanglement, Measures to characterize entanglement,
Entropy and Area/Volume law, Quantum quench and
Entanglement Dynamics, Loschmidt echo, Out of time
ordered correlators (OTOCs), Circuit complexity,
Matrix Product states and applications,
Numerical algorithms including iTEBD, Applications
to lattice and continuum models with finite/infinite
dimensional Hilbert space.

Title-2: Riemannian Geometry
(Instructor: Prof. Amit Ghosh)

Syllabus: Manifolds. Riemannian manifolds. Connections
on Riemannian manifolds. Riemannian submanifolds.
Some applications of Riemannian manifolds in physics.
(Reading course. Books and materials will be given by
the instructor. Students will prepare the materials and present
alternatively. All issue will be discussed.)