Factor ordering and path integral measures in 2d quantum gravity and quantum cosmology

RACHEL MAITRA, Wentworth Institute of Technology — A central problem in canonical quantum gravity is the selection, from among infinitely many possibilities, of an appropriate ordering for noncommuting factors in the kinetic term of the Wheeler-DeWitt operator. The same issue presents itself in a path integral approach when one seeks to define a measure on a space of histories. This talk examines these two linked problems in the simpler contexts of 2d quantum gravity and quantum cosmology, where the configuration space becomes finite dimensional and the issues quantum mechanical rather than quantum field theoretic. For a range of factor orderings, we investigate the implied domain of physical states for the Hamiltonian, solutions to the Wheeler-DeWitt equation, and associated path integral expressions.