

## **Physical properties of the quantum system**

The motivation of my work is the canonical quantization of cosmological and other models exhibiting high degree of symmetries in order to study the physical properties of the obtained quantum system.

To this end, in our approach, we start from highly symmetric classical spacetime metrics (e.g. Bianchi models, black holes e.t.c.) and study the symmetries of the configuration space, in the context of the minisuperspace approach. When there is no gauge-fixing prior to the solution of the equations, the symmetries of the configuration space appear by virtue of the constraints.

In this talk, I will discuss how the first integrals of motion related to these symmetries on the constraint surface can be used alternatively to the Einstein's field equations to obtain the classical solution.

If time allows, I will also show how these symmetries can be turned to operators and how by imposing them on the wave function together with the constraints generalize, in this sense, the Dirac quantization procedure for the case of minisuperspace models.

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