



# UCSC

SEMINARIO DEL DEPARTAMENTO DE MATEMÁTICA Y FÍSICA APLICADAS

FACULTAD DE INGENIERÍA

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## Quasinormal modes for scalar perturbation of a rotating BH in 2+1 dimensions

**Dr. Octavio Fierro**

DMFA

Universidad Católica de la SSma Concepción

### Abstract

The massless limit of New Massive Gravity in three dimensions admits asymptotically locally flat, rotating black holes. These black holes are characterized by their mass and angular momentum, as well as by a hair of gravitational origin. We show that the equation for a massless scalar field on this background can be solved in an analytic manner and that the quasinormal frequencies can be found in a closed form. In the limit of zero angular momentum, for the black hole, the solution is infinitely damped, which is consistent with the inexistence of quasinormal modes in the static version of this BH.

Viernes 23 de Noviembre de 2018, 11 : 40 horas

Sala: Auditorio FACEA-UCSC

Edificio Facultad de Ciencias Económicas y Administrativas, San  
Andrés

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**Coordinador:**

Marco Uribe S., Departamento de Matemática y Física Aplicadas, muribe@ucsc.cl