

# Theory Colloquium

Crispin Gardiner, University of Otago, New Zealand

“History of the Master Equation 1910-2000”

## Abstract

Master equations, both classical and quantum, have been in use since at least 1910 as the basis for the description of random events in physics, and my career in Quantum Optics since the 1970s has been built on the foundation of the master equation description of quantum optics.

But why is it called the master equation, and who is responsible for its development into one of the major tools in the physics of randomness? And how far can we trust the master equation?

I will track back the origin of the idea, and its importance in physics to the very beginning, with some unexpected results. I will cover kinetic theory, quantum optics, and the mathematics of stochastic processes, both quantum and classical up to the end of the 20th century. At the same time, I will give some particular attention to the conditions necessary for the validity of the Master Equation.

Wednesday | 03.05.2023 | 16:15

IQOQI | Schrödinger hall