

## **Dark matter, black holes, and gravitational waves**

Prof. Dr. Gianfranco Bertone

*Institute of Physics, University of Amsterdam*

I will start with an overview of the status of dark matter searches and of the prospects for uncovering its nature in the next decade. I will then focus on the interplay between dark matter, black holes, and gravitational waves, and discuss the prospects for characterizing and identifying dark matter using gravitational waves, covering a wide range of candidates and signals. Finally, I will present some new results on the detectability of dark matter overdensities around black holes in binary systems, and argue that future interferometers may enable precision studies of the dark matter distribution and particle properties.