



# Gravitational Wave Sources at the Hearts of Galaxies

**Date:** April 7, 2021 (Wednesday)

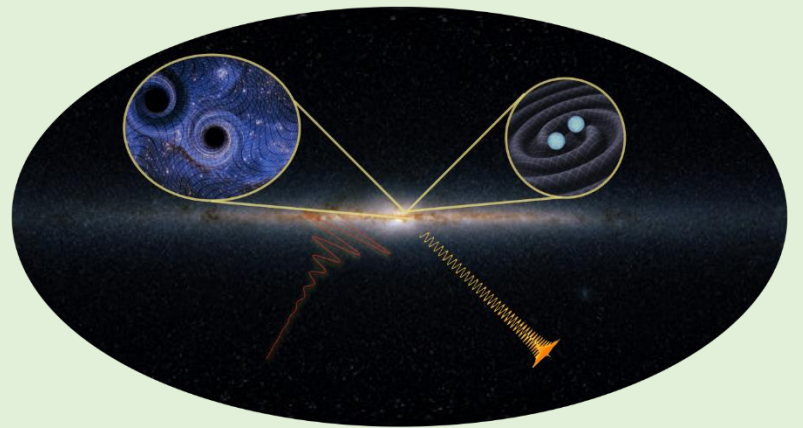
**Time:** 10:00 a.m.

**Zoom Online Lecture:**

<https://bit.ly/3d7ddT9>

**Meeting ID:** 983 5100 9114

**Password:** 2859



## Biography:

Prof. Smadar Naoz is an associate professor at the Department of Physics & Astronomy, UCLA in the Division of Astronomy and Astrophysics. She is also Howard and Astrid Preston Term Chair in Astrophysics, and a member of the Bhaumik Institute for Theoretical Physics where she also serves in the executive committee. She has won the Helen B. Warner Prize for Astronomy in 2021.

Prof. Naoz is interested in a broad range of topics in theoretical astrophysics with an emphasis on dynamical research problems from cosmology to black holes, gravitational wave sources, stars, and extrasolar planets. Most notably she has found a new mechanism that, not only produces Jupiter-like planets in a very close proximity to their host star but can also explain the eccentric and even retrograde observed systems. In recent years, She has studied the underlying physics of triple-body systems and showed that these systems are far more exciting and richer than initially thought of in the past. These new developments are now being applied by the community to a diverse range of astrophysical systems at different scales.



**Professor Smadar Naoz**

*University of California at Los Angeles*

## Abstract:

The recent gravitational-wave detections by LIGO/Virgo revolutionized the way we sense our Universe. However, it remains challenging to explain the formation channels of these sources. Motivated by these challenges, recent studies have emphasized the significant contribution of dynamical formation channels in dense stellar environments to the overall gravitational-wave signals. Focusing on the dense stellar clusters surrounding supermassive black holes at the center of galaxies, I will outline stellar binaries' evolution from birth up to possible gravitational-wave mergers. The supermassive black hole can induce collisions between binary members, while the frequent interactions with the neighbors in this dense environment can sometimes tend to unbind the binary. I will highlight some exotic outcomes, including gravitational-wave emission, for this dynamical evolution channel. I will show how this channel can leave a clear signature on the gravitational-wave signals, allowing differentiation between different merger mechanisms. The Laser Interferometer Space Antenna (LISA) can potentially be used to distinguish between channels.

**Anyone interested is welcome to attend!**

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