



*Physics Department seminar*

DIPARTIMENTO DI FISICA, VIA CELORIA 16, MILANO

**Aula A in presence and streaming**

<https://fisica-unimi.zoom.us/j/95204696800?pwd=S3NjZGJHSmVMdXh5UEdSTDIVRjBNQT09>

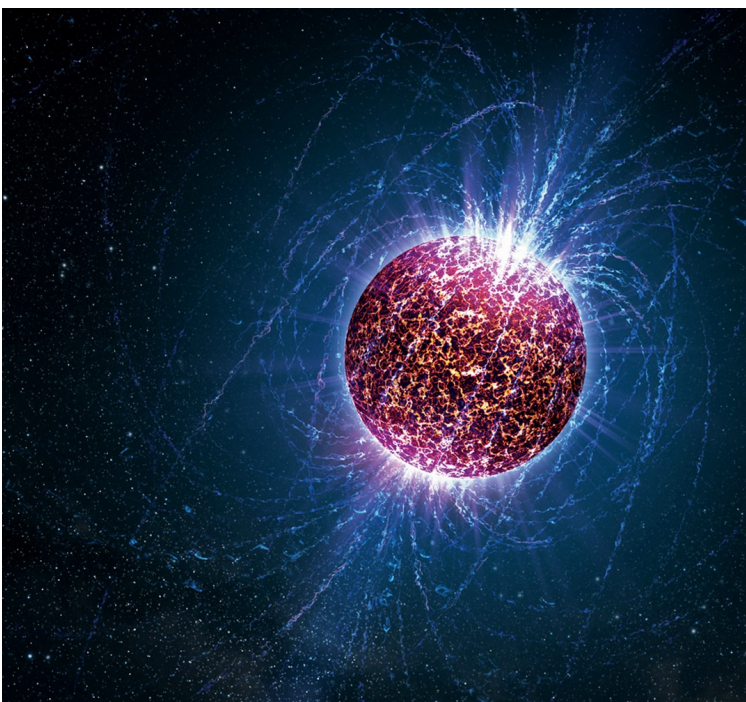
**13 Maggio 2022– 14:30**

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## **Probing high density physics in the gravitational wave astronomy era**

The recent detections of gravitational waves from the inspiral of neutron star binaries have opened a new window to probe high density physics. The coming years will deliver new observations of such systems, but may also lead to the first detection of continuous gravitational waves. These are long lived quasi-periodic signals, the gravitational wave equivalent of a pulsar, and are likely to offer a unique insight into the interiors of the neutron stars emitting them.



In this talk I will discuss several mechanisms for continuous gravitational wave emission from neutron stars, and discuss the prospects of detection, focusing in particular on the constraints that can be obtained on the interactions between superfluids and superconductors in the stellar interior.

Finally I will also discuss briefly how continuous gravitational waves can be used not only to study neutron stars, but also to probe the nature of dark matter.

Students are cordially invited – Contact [silvia.leoni@mi.infn.it](mailto:silvia.leoni@mi.infn.it)