

# List of Short Talks

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**Norichika Sago**

Kyoto University/Osaka Metropolitan University

**Detectability of the EMRI gravitational wave phase correction induced by reflective boundary**

Dec. 26 17:10-17:20; Short Talk

We investigated the effect of the hypothetical reflecting boundary near the black hole event horizon on the gravitational waves (GWs) from extreme mass-ratio inspirals (EMRIs). The energy and angular momentum loss rates are modulated with the period corresponding to the inverse time scale for the round trip of GWs between the boundary and the angular momentum barrier. We found that the modulation induces the oscillatory modification of the GW phase, which can be detected in the actual data analysis. We propose a simple but efficient method to search the signature in actual data based on the matched filtering technique.

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**Nicolò Zenoni**

Università Cattolica del Sacro Cuore & KU Leuven

**Complexity geometry and black holes**

Dec. 27 17:10-17:20; Short Talk

Quantum information may unveil the physics beyond the horizon of a black hole. A pivotal role is supposed to be played by computational complexity, originally defined as the minimum number of gates building a quantum circuit. In particular, black hole interiors and complexity of chaotic random circuits evolve in time and respond to perturbations in a similar way. For holographic applications, a continuous notion of complexity is prompted. In a promising geometric approach, complexity is defined as a distance on the manifold of unitary operators, endowed with a metric which penalizes operations with high computational cost. Huge arbitrariness stems from the penalization choice. Considering a system of  $n$  qubits, in this seminar we present a penalization schedule for which complexity geometry manifests a chaotic behavior, as required to mimic black hole interiors.

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