

The 7th PUBLIC ExU COLLOQUIUM

September 30th (Tue.) ONLINE

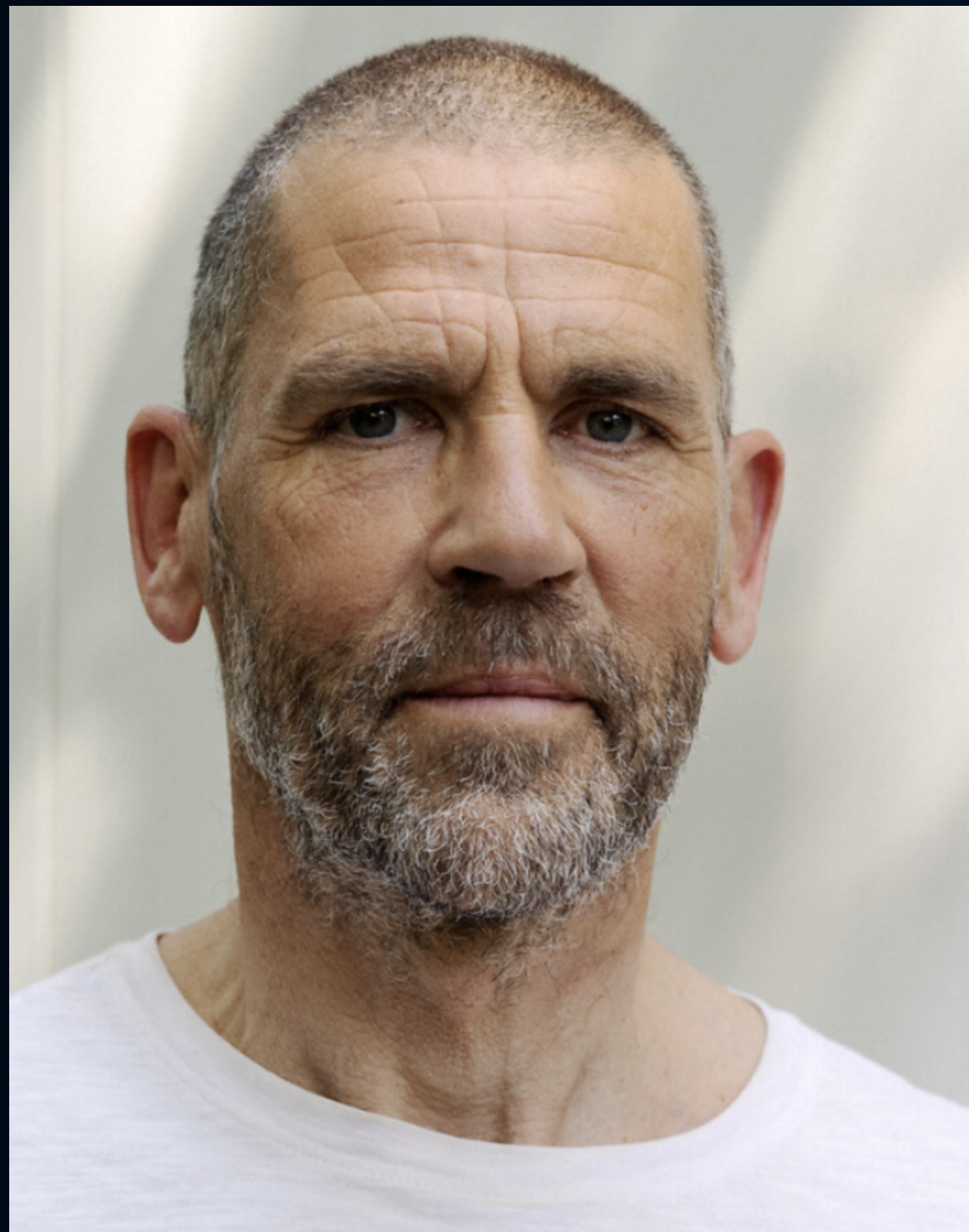
TALK 16:00 - 17:00 (JST)

September 30th (Tue.) 9:00 - 10:00 (CEST)

September 30th (Tue.) 7:00 - 8:00 (GMT)

ONLINE CHAT TIME
17:00 - 18:00 (JST)

Registration required (click [HERE](#))



Speaker

Prof. Alexander Altland

University of Cologne

Extreme Universe, JAPAN



MEXT -KAKENHI- Grant-in-Aid for Transformative Research Areas (A)
The Natural Laws of Extreme Universe

Late time quantum chaos in two-dimensional gravity

Abstract

Quantum chaotic systems exhibit universal correlations in their spectra and wave functions, which have been described using various approaches such as random matrix theory, semiclassical analysis, and quantum field theory. While these concepts were initially developed in fields like condensed matter and many-body physics, recent work extends quantum chaotic universality to gravity. The principle finds its most concrete manifestation in a two-dimensional holographic correspondence and the observation of chaotic correlations in its gravitational path integral. In this talk, we will review these developments (for non-experts) and reason that the completion of the holographic principle to all relevant time scales requires of elements of string theory. We will demonstrate that the generalized framework enables a high-precision description of the gravitational bulk, with an accuracy that can resolve individual chaotic wave functions.

Extreme Universe 2025