Contribution ID: **104** Type: **Invited Poster**

# Superradiance on ytterbium clock transition for frequency metrology

Today's unsurpassed timekeepers are passive optical atomic clocks, which rely on frequency stabilization of an external optical local oscillator on an atomic transition. However, overcoming their technical limitations, such as the Dick effect and cavity instabilities, is a challenging task.
To circumvent the issues related to the local oscillator frequency instability, a promising idea is to use fluorescence emitted by an atomic ensemble on a narrow optical transition directly as a frequency reference for the clock laser.
We present here the development of a cold atom active optical clock designed to leverage superradiant emission on the forbidden narrow-linewidth transition in fermionic 171 ytterbium.

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**Track Classification:** Molecular, Atomic, Ion and Nuclear Clocks