## LIM25 - Annecy



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## CCAT: Submillimeter Line Intensity Mapping of [CII] and CO with FYST

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The components of FYST (the Fred Young Submm Telescope) are arriving in Chile at the time of writing (March 2025) and the assembly of the observatory is anticipated to finish in the second half of 2025. In early 2026 we expect first light with Prime-Cam, a modular receiver for FYST, with the EoR-Spec (Epoch of Reionization Spectrometer) instrument module being deployed later that year, setting the table for initial line intensity mapping observations and the Deep Spectroscopic Survey (DSS) in early 2027. It is important to make accurate forecasts for the first stages of the [CII] LIM observation in the 210-420GHz range. These predictions include the [CII] signal at redshifts between 3.5 and 8, expected CO interloper signal at lower redshift, and atmospheric noise. They also inform how well the aforementioned noise sources can be removed from the signal. We present results from the latest simulations, including the impact of masking and cross-correlation techniques in recovering [CII] signal. We also show possible synergies for CO observations with other instruments. In addition, we present the updated status of the telescope and instrument, for the initial observation period and shortly thereafter.

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