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(I) Multi-line intensity mapping of the high redshift Universe

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Line Intensity Mapping has emerged as a powerful tool to probe the large-scale structure across a wide range of redshift, with the potential to shed light on dark energy at low redshift and the cosmic dawn and reionization process at high redshift. Multiple spectral lines, including the redshifted 21cm, CO, [CII], H-alpha, and Lyman-alpha emissions, are promising tracers in the intensity mapping regime, with several experiments on-going or in the planning. I will discuss results from current pilot programs, and prospects for the upcoming TIME experiment and the SPHEREx mission. I will illustrate how the use of cross-correlation between multiple line intensity maps will enable unique and insightful measurements, revealing for example the tomography of reionization and cosmological probes in the high redshift Universe.

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Track Classification: Symposia Day (DTP) - Cosmology/Jim Peebles celebration