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A new probe: kSZ velocity reconstruction of DESI galaxies with ACT DR6 and opportunities.

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The kinetic Sunyaev-Zel'dovich (KSZ) effect (Doppler boosting along the line of sight of CMB photons by electrons that have non-zero bulk velocity) induces a non-zero density-density-temperature bispectrum, that can be used to reconstruct the large-scale velocity field using the so-called "kSZ tomography"technique. In this presentation, I will first detail how we can reconstruct the velocities from the kSZ effect, and will present the first measurement of galaxy-velocity power spectrum of the different DESI tracers and how this methodology can be easily translated to phomoetric sample (like Euclid or LSST). In particular, I will show a **high significance detection** with luminous red galaxies (SNR ~ 20), and will report the **first detection** of kSZ effect with emission line galaxies (SNR ~ 7) and quasars (SNR ~ 7). Finally, I will present the constraint on the primordial non-Gaussianity parameter (fnl_loc) with these new observables and how they will improve the galaxy-galaxy measurement alone.

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