Uncovering Early Galaxy Evolution in the ALMA and JWST Era
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Spatially resolving the relics: The inferring the physics driving the quenching of massive galaxies from kinematics at $z \sim 1$ and beyond

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Abstract. Today's massive elliptical galaxies are primarily red-and-dead, dispersion supported ellipticals. The physical process(es) driving the shutdown or 'quenching' of star formation in these galaxies remains one of the least understood aspects of galaxy formation and evolution. Although today's spiral and elliptical galaxies exhibit a clear bimodality in their structures, kinematics, and stellar populations, it may be that the quenching and structural transformation do no occur simultaneously. In this talk I will present evidence that early quiescent galaxies, observed much closer to their quenching epoch at $z \sim 1$, retain significant rotational support ($\sim$twice as much as local ellipticals). This suggests that the mechanisms responsible for shutting down star formation do not also have to destroy ordered motion in massive galaxies; the increased dispersion support could occur subsequently via hierarchical growth and minor merging. I will discuss this evidence in conjunction with recent ALMA studies of the dramatic range in molecular gas reservoirs of recently quenched high redshift galaxies to constrain quenching models. Finally, I will discuss prospects for extending spatially resolved spectroscopic studies of galaxies immediately following quenching with JWST and eventually 30-m class telescopes.