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Galactic Winds Driven by Supernovae and Radiation Pressure
DONG ZHANG, SHANE DAVIS, University of Virginia, TODD THOMPSON, The Ohio State University, ELIOT QUATAERT, University of California, Berkeley, NORMAN MURRAY, Canadian Institute for Theoretical Astrophysics — Galactic winds are ubiquitous in most rapidly star-forming galaxies. They are crucial to the process of galaxy formation and evolution, shaping the stellar mass function and the mass-metallicity relation, and enriching the intergalactic medium with metals. Although important, the physics of galactic winds is still unclear. Winds may be driven by the heating of the interstellar medium by overlapping supernovae explosions, the radiation pressure by continuum absorption and scattering of starlight on dust grains and so on. The comparison between theory and observation is still incomplete. The growing observations of emission and absorption of cold molecular, cool atomic, and ionized gas in galactic outflows in a large number of galaxies have not been well explained by any models over a vast range of galaxy parameters. A full understanding of these issues requires both better theoretical explorations and comparisons with observations. I will be taking about the theoretical models of both supernova-driven and radiation-pressure-driven galactic winds, and compared these models with observations. I will also be talking about our radiative hydrodynamical numerical simulations on momentum coupling between gas and radiation field in rapidly star-forming galaxies.

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