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Early-time development of azimuthal anisotropies from small to large Knudsen numbers

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We investigate the onset of anisotropic flow in various particle-based transport approaches, ranging from the quasi-collisionless case to the hydrodynamic regime. In the former case, general arguments applied to a phase-space distribution obeying the Boltzmann equation in the limit of few rescatterings lead to a power-law increase of v_n as a function of time. We confirm this behavior in numerical transport calculations with a fixed initial profile, and further study how the exponent of the power law changes when the average number of rescatterings per particle increases, yielding a different result in the hydrodynamic limit. This shows that the early-time development of anisotropic flow is not universal across different theories.

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