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Binary black hole spacetimes in harmonic coordinates PRAYUSH KUMAR, Cornell University, HARALD PFEIFFER, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam-Golm, Germany — Harmonic coordinates are often used in analytical relativity calculations targeted at binary black hole spacetimes, as they provide for the simplification of Einstein equations to a set of quasilinear wave equations. In this talk, I will discuss the existence and characteristics of simple harmonic coordinates in highly dynamical (numerical) spacetimes of merging black holes. I will also describe a method of tracking black hole trajectories in pure harmonic coordinates. This method has the potential to enable gauge-dependent comparisons of two-body kinematics between Numerical Relativity and post-Newtonian theory results, allowing for better calibration of general relativistic models for binary black hole dynamics.

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