

Numerical relativity

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Numerical relativity denotes the field of research where one seeks solutions to Einstein's equations by numerical means. I will first present the mathematical foundations that enable to put those equations into the suitable form of a Cauchy problem. This is known as the 3+1 formalism and it is used by almost all current calculations. I will then concentrate on one particular problem which is the one of coalescing binary black holes. For years researchers have failed to correctly compute the evolution of those systems. I will elaborate on some of the difficulties and the way they have been dealt with. Results and current status of the field are then going to be exposed and the future discussed.