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Backreaction in the relativistic Zel'dovich approximation

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Zel'dovich's approximation is in Newtonian cosmology a practical tool to investigate the evolution of mildly nonlinear regions of the Universe. Its extension to the relativistic case is important for the investigation of the backreaction of inhomogeneities on the evolution history of spatial domains of the Universe. This talk presents a Lagrangian framework that allows for a one to one correspondence of Newtonian and general relativistic quantities and provides a non-perturbative backreaction model, together with domain-dependent quantitative estimates of the backreaction effect.

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