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A geometric framework for cosmological spacetimes BATRICE BONGA, Perimeter Inst for Theo Phys, KARTIK PRABHU, Cornell University — Null infinity in asymptotically flat spacetimes posses a rich mathematical structure; including the BMS group and the Bondi news tensor that allow one to study gravitational radiation rigorously. However, FLRW spacetimes are not asymptotically flat because their stress-energy tensor does not decay sufficiently fast and in fact diverges at null infinity. We define a large class of spacetimes whose stress-energy tensor have a singular part at null infinity that is universal. This class includes matter- and radiation-dominated FLRW spacetimes. Interestingly, for this larger class of spacetimes, the BMS algebra naturally emerges as the asymptotic symmetry. Future applications include studying the cosmological memory effect and asymptotic charges in this framework.

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