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Reheating the Universe in brane world cosmological models WAI FUNG CHOI, TIBERIU HARKO, KWONG SANG CHENG, Department of Physics, University of Hong Kong — The transition of the Universe from the inflationary era to the standard ΛCDM phase is studied in the framework of the brane world cosmological models. In this scenario the presence of the large extradimensions determine the cosmological dynamics. The brane Universe is initially in an inflationary phase driven by a scalar field. The decay of the scalar field heats up the Universe. The evolution on the brane is generally modified due to the new terms in the energy momentum tensor. We investigate the reheating process, by assuming that the quadratic corrections, a consequence of the non-compactified geometry, give the dominant contribution to the energy-momentum tensor. The reheating process is studied by using both analytical and numerical methods. We generalize the standard reheating model by allowing the exchange of mass-energy between the bulk and the brane. In particular, we carefully consider the effect of the presence of a scalar field in the bulk on the reheating process. Constraints from various cosmological observations on the flow of energy/matter from the bulk into the brane are also obtained.

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