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Primordial Black Holes from Inflation

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Primordial black holes (PBHs) are the most economical option used to explain dark matter (DM). If generated by large fluctuations of scalar primordial perturbations, a full explanation of DM in terms of PBHs only depends on a thorough understanding of inflation. Recently, constraints on the existence of PBHs were largely updated, leaving the intriguing possibility that DM is entirely constituted by the PBHs of sub-lunar masses. In this case, their abundance is intimately related to the inflationary evolution at sub-CMB scales. Thus, the discovery of those mini PBHs would also provide important information about the initial inflationary stages of our universe. The last few years have also seen a rise in intense theoretical activity that has provided the foundations for precise predictions of PBH abundances.

The aim of this Special Issue was to collect the somewhat scattered literature of the last few years in a pedagogical and coherent book detailing the current knowledge of inflationary generated PBHs as DM.

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