

A broad range of single field models of inflation are analyzed in light of all relevant recent cosmological data, checking whether they can lead to the formation of long-lived Primordial Black Holes (PBHs) as candidate for Dark Matter. To that end we calculate the spectral index of the power spectrum of primordial perturbations as well as its first and second derivatives. PBH formation is possible only if the spectral index increases significantly at small scales, i.e. large wave number k . Since current data indicate that the first derivative α_s of the spectral index $n_s(k_0)$ is negative at the pivot scale k_0 , PBH formation is only possible in the presence of a sizable and positive second derivative ("running of the running") β_s . Among the three small-field and five large-field models we analyze, only one small-field model, the "running mass" model, allows PBH formation, for a narrow range of parameters. We also note that none of the models we analyze can accord for a large and negative value of α_s , which is weakly preferred by current data.