Enlightening the primordial dark ages

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Propositions

accompanying the dissertation "Enlightening the Primordial Dark Ages"

1. Light fields on an axion-dilaton system may form a new type of exact multi-field inflationary attractor with single-field-like predictions.
   Chapter 2 of this thesis

2. Chiral gravitational waves generated by a non-Abelian gauge field sector do *not* have to produce a blue-tilted tensor power spectrum.
   Chapter 3 of this thesis

3. Preheating in α-attractors is a genuinely multi-field phenomenon, since for highly curved manifolds it is dominated by field-space effects.
   Chapter 4 of this thesis

4. Asymmetry around the minimum of the potential may significantly boost as well as hinder preheating.
   Chapter 5 of this thesis

5. With ever increasing evidence for inflation coming from the cosmic microwave background and large-scale structure, the post-inflationary era becomes one of the major frontiers in our understanding of the early universe.
   M. A. Amin, M. P. Hertzberg, D. I. Kaiser and J. Karouby, Int. J. Mod. Phys. D **24** (2014), 1530003.

6. If gravitational waves produced during preheating exist, they will necessarily fall within the frequency range that is feasible for direct detection experiments – from laboratory through to solar system scales.
   R. Easther and E. A. Lim, JCAP **04** (2006), 010.

7. Models with non-Abelian gauge fields end inflation in a state of radiation domination. Hence, it will be interesting to ask whether new possibilities for reheating could be found that go beyond the standard story of parametric resonance.
   P. Adshead, E. Martinec and M. Wyman, JHEP **09** (2013), 087.

8. Multi-field inflation can enhance the primordial power spectrum with distinctive signatures, seeding primordial black holes sensitive to the details of the ultraviolet theory wherein inflation is realized, opening a new window into early Universe physics at scales far smaller than the cosmic microwave background.
   G. A. Palma, S. Sypsas and C. Zenteno, Phys. Rev. Lett. **125** (2020) no.12, 121301.

9. Willpower is at least as important as intelligence to stay in science.

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Leiden, 03-11-2021