
TestableLepogenesis

A Data Management Plan created using DMPonline

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Project abstract:

The aim of this proposal is to put the question of the origin of matter in the Universe in a very practical (from the theorist's point of view) and timely framework. More technically, it is planned to study baryogenesis--the creation of baryon-antibaryon asymmetry which eventually leads to the observed amount of matter--in the extension of the Standard Model of particle physics (SM) with three right-handed (RH) Majorana neutrinos. Only the case of two RH neutrinos has been intensively studied so far. The objectives of this proposal are: - Derivation of the kinetic equations describing the asymmetry generation in the model with three RH neutrinos. For the masses below 10 GeV, these equations can be derived using the approach which has been already successfully applied to the two RH neutrino case. Heavier masses of RH neutrinos will require further modifications. - Identification of the experimentally interesting quantities and their relations to the parameters of the model. - Extensive study of the parameter space of the model. This study is crucial in order to understand the sensitivity of experiments, such as LHCb, NA62, SHiP, MATHUSLA, to the model. It will require the development of a software allowing a fast and efficient solution of the kinetic equations and sampling of the parameter space. This software will be made publicly available under an open-source license. Achievement of these objectives will establish a new link between experimental particle physics and theoretical cosmology. Namely, it will allow identifying particular signatures which could be searched for in the current and planned experiments.

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TestableLepogenesis - Initial DMP

Manchester Data Management Outline

- No
- Not applicable
- Yes – only institution involved
- Not acquire or re-use data (please provide details)
- University of Manchester Research Data Storage Service (Isilon)
- Other storage system (please list below)
- < 1 TB
- Not applicable
- < 5 years
- No sensitive or personal data

N/A

- Not applicable
- No
- Not applicable
- No

Fedor Bezrukov

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1. Data summary

No data is collected. Research result are published papers.

2. FAIR data

All papers are submitted to arXiv and publicly searchable

All papaers are submitted to arXiv and published in open access journals.

N/A

N/A

3. Allocation of resources

N/A

4. Data security

N/A

5. Ethical aspects

N/A

6. Other

N/A