Plan Overview

A Data Management Plan created using DMPonline

Title: TestableLepogenesis

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Template: Horizon 2020 DMP Customised By: University of Manchester

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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

1. Is this project already funded?

- No

2. If you will be applying for funding from multiple sources who else will you be applying to?

- Not applicable

3. Is The University of Manchester the lead institution for this project?

- Yes – only institution involved

4. What data will you use in this project (please select all that apply)?

- Not acquire or re-use data (please provide details)

5. Where will the data be stored and backed-up during the project lifetime?

- Other storage system (please list below)
- University of Manchester Research Data Storage Service (Isilon)

6. If you will be using Research Data Storage, how much storage will you require?

- < 1 TB

7. If you have a contractual agreement with a 3rd party data provider will any of the data associated with this project be sourced from, processed or stored outside of the institutions and groups stated on your agreement?

- Not applicable

8. How long do you intend to keep your data for after the end of your project (in years)?

- < 5 years

Questions about personal information

Personal information or personal data, the two terms are often used interchangeably, relates to identifiable living individuals. Special category personal data is more sensitive information such as medical records, ethnic

background, religious beliefs, political opinions, sexual orientation and criminal convictions or offences information. If you are not using personal data then you can skip the rest of this section.

Please note that in line with data protection law (the General Data Protection Regulation and Data Protection Act 2018), personal information should only be stored in an identifiable form for as long as is necessary for the project; it should be pseudonymised (partially de-identified) and/or anonymised (completely de—identified) as soon as practically possible. You must obtain the appropriate ethical approval in order to use identifiable personal data.

- No sensitive or personal data

10. Please provide details of how you plan to store, protect and ensure confidentiality of the participants' information as stated in the question above.

N/A

11. If you are storing personal information will you need to keep it beyond the end of the project?

- Not applicable

12. Sharing person identifiable information can present risks to participants' privacy, researchers and the institution. Will the participants' information (personal and/or sensitive) be shared with or accessed by anyone outside of the University of Manchester? This includes using 3rd party service providers such as cloud storage providers or survey platforms.

- No

13. If you will be sharing personal information outside of the University of Manchester, will the individual or organisation you are sharing with be outside the EEA?

- Not applicable

14. Are you planning to use the personal information for future purposes such as research?

- No

15. Who will act as the data custodian or information asset owner for this study?

Fedor Bezrukov

16. Please provide the date on which this plan was last reviewed (dd/mm/yyyy).

08/09/2018

1. Data summary

Provide a summary of the data addressing the following issues:

- **State the purpose of the data collection/generation**
- **Explain the relation to the objectives of the project**

- **Specify the types and formats of data generated/collected**
- **Specify if existing data is being re-used (if any)**
- **Specify the origin of the data**
- **State the expected size of the data (if known)**
- **Outline the data utility: to whom will it be useful**

No data is collected. Research result are published papers.

2. FAIR data

2.1 Making data findable, including provisions for metadata:

- **Outline the discoverability of data (metadata provision)**
- **Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?**
- **Outline naming conventions used**
- **Outline the approach towards search keyword**
- **Outline the approach for clear versioning**
- **Specify standards for metadata creation (if any). If there are no standards in your discipline describe what metadata will be created and how**

All papers are submitted to arXiv and publicly searchable

2.2 Making data openly accessible:

- **Specify which data will be made openly available? If some data is kept closed provide rationale for doing so**
- **Specify how the data will be made available**
- **Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?**
- **Specify where the data and associated metadata, documentation and code are deposited**
- **Specify how access will be provided in case there are any restrictions**

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

2.3 Making data interoperable:

- **Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.**
- **Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?**

N/A

2.4 Increase data re-use (through clarifying licenses):

- **Specify how the data will be licenced to permit the widest reuse possible**
- **Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed**
- **Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why**
- **Describe data quality assurance processes**
- **Specify the length of time for which the data will remain re-usable**

N/A

3. Allocation of resources

Explain the allocation of resources, addressing the following issues:

- **Estimate the costs for making your data FAIR. Describe how you intend to cover these costs**
- **Clearly identify responsibilities for data management in your project**
- **Describe costs and potential value of long term preservation**

N/A

4. Data security

Address data recovery as well as secure storage and transfer of sensitive data

N/A

5. Ethical aspects

To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former

N/A

6. Other

Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

N/A

TestableLepogenesis - Detailed DMP

1. Data summary

State the purpose of the data collection/generation

No data collection. Rresults of the project are journal papers published in arXiv and peer review Open Access journals.

Explain the relation to the objectives of the project

N/A

Specify the types and formats of data generated/collected

N/A

Specify if existing data is being re-used (if any)

N/A

Specify the origin of the data

N/A

State the expected size of the data (if known)

N/A

Outline the data utility: to whom will it be useful

Particle Phyiscs community

2.1 Making data findable, including provisions for metadata [FAIR data]

Outline the discoverability of data (metadata provision)

All papers are published to publicly available arXiv

Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?

DOI are assigned to the published versions of the papers.

Outline naming conventions used

N/A

Outline the approach towards search keyword

N/A

Outline the approach for clear versioning

Versioning is provided in arXiv, which tracks all teh submitted versions of the papers.

Specify standards for metadata creation (if any). If there are no standards in your discipline describe what metadata will be created and how

N/A

2.2 Making data openly accessible [FAIR data]

Specify which data will be made openly available? If some data is kept closed provide rationale for doing so

All research outcome is in the form of open access publications.

Specify how the data will be made available

arXiv and Open access journals.

Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?

N/A

Specify where the data and associated metadata, documentation and code are deposited

N/A

Specify how access will be provided in case there are any restrictions

N/A

2.3 Making data interoperable [FAIR data]

Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.

N/A

Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?

Question not answered.

2.4 Increase data re-use (through clarifying licenses) [FAIR data]

Specify how the data will be licenced to permit the widest reuse possible

Question not answered.

Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed

Question not answered.

Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why

Question not answered.

Describe data quality assurance processes

Question not answered.

Specify the length of time for which the data will remain re-usable

Question not answered.

3. Allocation of resources

Estimate the costs for making your data FAIR. Describe how you intend to cover these costs

Question not answered.

Clearly identify responsibilities for data management in your project

Question not answered.

Describe costs and potential value of long term preservation

Question not answered.

4. Data security

Address data recovery as well as secure storage and transfer of sensitive data

Question not answered.

5. Ethical aspects

To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former

Question not answered.

6. Other

Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

Question not answered.

TestableLepogenesis - Final review DMP

1. Data summary

State the purpose of the data collection/generation

Question not answered.

Explain the relation to the objectives of the project

Question not answered.

Specify the types and formats of data generated/collected

Question not answered.

Specify if existing data is being re-used (if any)

Question not answered.

Specify the origin of the data

Question not answered.

State the expected size of the data (if known)

Question not answered.

Outline the data utility: to whom will it be useful

Question not answered.

2.1 Making data findable, including provisions for metadata [FAIR data]

Outline the discoverability of data (metadata provision)

Question not answered.

Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?

Question not answered.

Outline naming conventions used

Question not answered.

Outline the approach towards search keyword

Question not answered.

Outline the approach for clear versioning

Question not answered.

Specify standards for metadata creation (if any). If there are no standards in your discipline describe what metadata will be created and how

Question not answered.

2.2 Making data openly accessible [FAIR data]

Specify which data will be made openly available? If some data is kept closed provide rationale for doing so

Question not answered.

Specify how the data will be made available

Question not answered.

Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?

Question not answered.

Specify where the data and associated metadata, documentation and code are deposited

Question not answered.

Specify how access will be provided in case there are any restrictions

Question not answered.

2.3 Making data interoperable [FAIR data]

Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.

Question not answered.

Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?

Question not answered.

2.4 Increase data re-use (through clarifying licenses) [FAIR data]

Specify how the data will be licenced to permit the widest reuse possible

Question not answered.

Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed

Question not answered.

Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why

Question not answered.

Describe data quality assurance processes

Question not answered.

Specify the length of time for which the data will remain re-usable

Question not answered.

3. Allocation of resources

Estimate the costs for making your data FAIR. Describe how you intend to cover these costs

Question not answered.

Clearly identify responsibilities for data management in your project

Question not answered.

Describe costs and potential value of long term preservation

Question not answered.

4. Data security

Address data recovery as well as secure storage and transfer of sensitive data

Question not answered.

5. Ethical aspects

To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former

Question not answered.

6. Other

Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

Question not answered.