FWO DMP Template

Project supervisors (from application round 2018 onwards) and fellows (from application round 2020 onwards) will, upon being awarded their project or fellowship, be invited to develop their answers to the data management related questions into a DMP. The FWO expects a **completed DMP no later than 6 months after the official start date** of the project or fellowship. The DMP should not be submitted to FWO but to the research co-ordination office of the host institute; FWO may request the DMP in a random check.

At the end of the project, the **final version of the DMP** has to be added to the final report of the project; this should be submitted to FWO by the supervisor-spokesperson through FWO's e-portal. This DMP may of course have been updated since its first version. The DMP is an element in the final evaluation of the project by the relevant expert panel. Both the DMP submitted within the first 6 months after the start date and the final DMP may use this template.

1. General Information	
Name applicant	**Annelien Vekemans**
FWO Project Number & Title	**1102722N - Holography and the Quantum Nature of Black Holes**
Affiliation	✗ KU Leuven ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other:
2. Data description	
Will you generate/collect new data and/or make use of existing data?	✗ Generate new data ✗ Reuse existing data
Describe the origin, type and format of the data (per dataset) and its (estimated) volume	**The research for this project is on theoretical and mathematical physics and it will not use any experimental data, field work or surveys. I will use published papers in refereed journals as well as arXiv**

*If you **reuse** existing data, specify the **source** of these data.* *Distinguish data **types** (the kind of content) from data **formats** (the technical format).*	preprints. These are freely available online or through the KU Leuven library services. The research output will be summarized and published on the arXiv as well as in refereed journals. Some of the research work necessitates the use of the symbolic and numerical computing software Mathematica. I will write and use code written for this software.

3. Ethical and legal issues

Will you use personal data? If so, shortly describe the kind of personal data you will use AND add the reference to your file in your host institution's privacy register. *In case your host institution does not (yet) have a privacy register, a reference is not yet required of course; please add the reference once the privacy register is in place in your host institution.*	☐ Yes ✗ No If yes: - Privacy Registry Reference: - Short description of the kind of personal data that will be used:
Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s).	☐ Yes ✗ No If yes: - Reference to ethical committee approval:
Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?	☐ Yes ✗ No If yes, please comment:
Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions are in place?	☐ Yes ✗ No If yes, please comment:

4. Documentation and metadata	
What documentation will be provided to enable understanding and reuse of the data collected/generated in this project?	**Relevant Mathematica files for calculations will be submitted as ancillary files to the publications on the arXiv repository, including detailed explanations regarding the code. This will allow for other researchers interested in my work to check or build upon my results.**
Will a metadata standard be used? If so, describe in detail which standard will be used. If not, state in detail which metadata will be created to make the data easy/easier to find and reuse.	☐ Yes ✗ No If yes, please specify: Instructions for running the Mathematica files will be added in the notebooks.

5. Data storage & backup during the FWO project	
Where will the data be stored?	**The Mathematica files for the calculations performed during the research will be stored on the cloud system (NextCloud) maintained by the Institute for Theoretical Physics.**
How will the data be backed up?	**The data will be backed up on the server on a daily (7 days) - weekly (4 weeks) - monthly (12 months) basis.**
Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.	✗ Yes ☐ No If no, please specify:
What are the expected costs for data storage and backup during the project? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.*	**The cost for storing the very small amount of data (only a few Mathematica notebooks, less than 1GB) will be insignificant and will be covered by the KU Leuven - ITF.**

Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?	**The data is stored on a file server which can only be accessed by personal authentication.**

<table>
<tr><td colspan="2" style="background:#4a86c5; text-align:center">6. Data preservation after the end of the FWO project
FWO expects that data generated during the project are retained for a period of minimally 5 years after the end of the project, in as far as legal and contractual agreements allow.</td></tr>
<tr><td>Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).</td><td>All results and Mathematica files will be retained for at least 5 years.</td></tr>
<tr><td>Where will these data be archived (= stored for the long term)?</td><td>The data will be stored on the cloud system (NextCloud) maintained by the ITF.</td></tr>
<tr><td>What are the expected costs for data preservation during these 5 years? How will the costs be covered?

<i>Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of the allocated project budget to be used to cover the cost incurred.</i></td><td>The cost for storing the very small amount of data (only a few Mathematica notebooks, less than 1GB) will be insignificant and will be covered by the KU Leuven - ITF.</td></tr>
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7. Data sharing and reuse	
Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined	☐ Yes ✗ No If yes, please specify:

in an agreement with a 3rd party, legal restrictions)?	
Which data will be made available after the end of the project?	**The relevant Mathematica files will be submitted as ancillary files to the publications on the arXiv repository, including detailed explanations regarding the code. This will allow for other researchers interested in my work to check or build upon my results.**
Where/how will the data be made available for reuse?	✗ In an Open Access repository ☐ In a restricted access repository ☐ Upon request by mail ☐ Other (specify):
When will the data be made available?	**As soon as the corresponding results are submitted to the arXiv**
Who will be able to access the data and under what conditions?	**The arXiv repository is open access. Anyone will be able to access the files.**
What are the expected costs for data sharing? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.*	**The cost for sharing the very small amount of data (only a few Mathematica notebooks) will be insignificant and will be covered by the KU Leuven - ITF.**

8. Responsibilities	
Who will be responsible for the data documentation & metadata?	**The PI bears the overall responsibility for updating & implementing this DMP**
Who will be responsible for data storage & back up during the project?	**The PI bears the overall responsibility for updating & implementing this DMP**
Who will be responsible for ensuring data preservation and sharing?	**The PI bears the overall responsibility for updating & implementing this DMP**
Who bears the end responsibility for updating & implementing this DMP?	**The PI bears the overall responsibility for updating & implementing this DMP**

Default response: The PI bears the overall responsibility for updating & implementing this DMP	