

FWO DMP Template - Flemish Standard Data Management Plan

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.

The DMP template used by the Research Foundation Flanders (FWO) corresponds with the Flemish Standard Data Management Plan. This Flemish Standard DMP was developed by the Flemish Research Data Network (FRDN) Task Force DMP which comprises representatives of all Flemish funders and research institutions. This is a standardized DMP template based on the previous FWO template that contains the core requirements for data management planning. To increase understanding and facilitate completion of the DMP, a standardized **glossary** of definitions and abbreviations is available via the following [link](#).

1. General Project Information	
Name Grant Holder & ORCID	Daniel Bath; 0000-0003-3062-3957
Contributor name(s) (+ ORCID) & roles	Nero Budur (0000-0002-0181-9988): supervisor
Project number & title	12E9623N, Singularities around Hyperplane Arrangements
Funder(s) GrantID	FWO
Affiliation(s)	<input checked="" type="checkbox"/> KU Leuven <input type="checkbox"/> Universiteit Antwerpen <input type="checkbox"/> Universiteit Gent <input type="checkbox"/> Universiteit Hasselt <input type="checkbox"/> Vrije Universiteit Brussel <input type="checkbox"/> Other: Provide ROR identifier when possible:
Please provide a short project description	The project is devoted to studying the singularities of hyperplane arrangements with special regard to the local systems on an arrangement's complement. There are three main focuses: resolving strong monodromy conjecture for hyperplane arrangements; giving a D-module interpretation of the resonance varieties of an arrangement; proving Terao's conjecture "hyperplane arrangements satisfy the logarithmic comparison theorem" as well as establishing a suitable twisted version. The first objective depends on solving a conjecture of Budur, Mustata, and Teitler; the second on developing notions from algebraic statistics (e.g. the critical set); the third on building on old work of Calderon-Moreno, Castro-Jimenez, Mond, Narvaez-Macarro which answers the question in a very special case.

and refer to specific datasets or data types when appropriate.	<input checked="" type="checkbox"/> No If yes, please describe:
Will you process personal data	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes:

? If so, briefly describe the kind of personal data you will use. Please refer to specific datasets or data types when appropriate. If available, add the reference to your file in your host institution's privacy register.	<ul style="list-style-type: none"> - Short description of the kind of personal data that will be used: - Privacy Registry Reference:
Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, ...)? If so, please comment per dataset or data type where appropriate.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please comment:
Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements, research collaboration agreements)? If so, please explain to what data they relate and what restrictions are in place.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please explain:
Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain to what data they relate and which restrictions will be asserted.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, please explain: The preprints will be made available on the arXiv (a popular preprint sharing website in the math community). They will be under arXiv's "perpetual, non-exclusive license" which gives them limited, non-exclusive rights to distribute the article. So the data of preprints will be free and openly accessible. Published, peer-reviewed papers will be available based on an individual's subscription to the journal in question.

3. Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable , for yourself and others, now and in the future (e.g. in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).	I will follow standard stylistic practices for mathematical manuscripts. I will also enlist colleagues to read preliminary versions to guarantee the proofs presented are readable while being sufficiently detailed. I will also use the Mathematics Subject Classification system as well as codewords to make the manuscripts (both preprint and published versions) easily searchable and findable for fellow researchers.
Will a metadata standard be used to make it easier to find and reuse the data ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If so, please specify which metadata standard will be used. If not, please specify which metadata will be created to make the data easier to find and	If yes, please specify (where appropriate per dataset or data type) which metadata standard will be used: I will use the Mathematics Subject Classification system as well as codewords to facilitate easy exposure and searchability of my articles

be created to make the data easier to find and reuse.

REPOSITORIES COULD ASK TO DELIVER METADATA IN A CERTAIN FORMAT, WITH SPECIFIED ONTOLOGIES AND VOCABULARIES, I.E. STANDARD LISTS WITH UNIQUE IDENTIFIERS.

searchability of my articles.

If no, please specify (where appropriate per dataset or data type) which metadata will be created:

4. Data Storage & Back-up during the Research Project

Where will the data be stored?

Preprints will be freely and openly published on the mathematical preprint sharing website arxiv.org. During their production, the content of these articles will be stored on my personal computer and backed up frequently. Eventually the papers will be published in a journal where it will remain stored in perpetuity. Even then the preprint will be freely and openly available as it was originally on arxiv.org. KU Leuven's repository Lyrias will also be used for archiving and facilitating access to the manuscripts.

How will the data be backed up?

Personal computer, external hard drives, various cloud services.

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WHAT STORAGE AND BACKUP PROCEDURES WILL BE IN PLACE TO PREVENT DATA LOSS? DESCRIBE THE LOCATIONS, STORAGE MEDIA AND PROCEDURES THAT WILL BE USED FOR STORING AND BACKING UP DIGITAL AND NON-DIGITAL DATA DURING RESEARCH.

REFER TO INSTITUTION-SPECIFIC POLICIES REGARDING BACKUP PROCEDURES WHEN APPROPRIATE.

The procedure will be to regularly (biweekly) make back-ups of manuscripts as they are being produced. These back-ups will be stored on a separate device (external hard drive, cloud) from the computer where the manuscript is generated. Additionally, old versions of manuscripts in progress will be preserved in case reversion to earlier work is deemed necessary.

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 yes, please specify concisely: External hard drives and cloud services are already available to the project.

If no, please specify:

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

CLEARLY DESCRIBE THE MEASURES (IN TERMS OF PHYSICAL SECURITY, NETWORK SECURITY, AND SECURITY OF COMPUTER SYSTEMS AND FILES) THAT WILL BE TAKEN TO ENSURE THAT STORED AND TRANSFERRED DATA ARE SAFE.⁷

I will use a password system to secure any manuscripts stored in electronically accessible theaters. The password will be changed regularly. As for physical external hard drives, these will be stored in a locked area of my office. Again: as the data is of the content of produced or being produced manuscripts, modification by bad actors is not expected.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

I expect essentially zero additional costs.

5. Data Preservation after the end of the Research Project

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Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

All data will be retained for at least five years after the end of the project.

Where will these data be archived (stored and curated for the long-term)?	The preprint manuscripts will be stored (freely, openly) on the arXiv in perpetuity. The published manuscripts will be given to the journal of publication for them to store in whatever way they deem fit.
What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	Essentially zero costs are expected.

6. Data Sharing and Reuse	
<p>Will the data (or part of the data) be made available for reuse after/during the project? Please explain per dataset or data type which data will be made available.</p> <p><small>NOTE THAT 'AVAILABLE' DOES NOT NECESSARILY MEAN THAT THE DATA SET BECOMES OPENLY AVAILABLE, CONDITIONS FOR ACCESS AND USE MAY APPLY. AVAILABILITY IN THIS QUESTION THUS ENTAILS BOTH OPEN & RESTRICTED ACCESS. FOR MORE INFORMATION: HTTPS://WIKI.SURFNET.NL/DISPLAY/STANDARDS/INFO-EU-REPO/#INFOEUREPO-ACCESSRIGHTS</small></p>	<p><input type="checkbox"/> Yes, in an Open Access repository</p> <p><input type="checkbox"/> Yes, in a restricted access repository (after approval, institutional access only, ...)</p> <p><input type="checkbox"/> No (closed access)</p> <p><input checked="" type="checkbox"/> Other, please specify: Preprints will be available in an Open Access repository; published articles will be available to any subscriber of the journal in question.</p>
<p>If access is restricted, please specify who will be able to access the data and under what conditions.</p>	<p>Any subscriber to the journal in question will be able to access the articles published therein.</p>
<p>Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain per dataset or data type where appropriate.</p>	<p><input type="checkbox"/> Yes, privacy aspects</p> <p><input checked="" type="checkbox"/> Yes, intellectual property rights</p> <p><input type="checkbox"/> Yes, ethical aspects</p> <p><input type="checkbox"/> Yes, aspects of dual use</p> <p><input type="checkbox"/> Yes, other</p> <p><input type="checkbox"/> No</p> <p>If yes, please specify: While preprints will be freely and openly accessible, access to published manuscripts will depend on an individual/institutions subscription to the journal. Preprints will remain available for access in perpetuity however.</p>
<p>Where will the data be made available? If already known, please provide a repository per dataset or data type.</p>	<p>The data in preprint form will be made available on arxiv.org. This is the standard (free, open) repository in the mathematical community.</p>

dataset or data type.	
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When will the data be made available? <small>THIS COULD BE A SPECIFIC DATE (DD/MM/YYYY) OR AN INDICATION SUCH AS 'UPON PUBLICATION OF RESEARCH RESULTS'.</small>	Upon successful research results, constituting completion of proof of theorems.
Which data usage licenses are you going to provide? If none, please explain why. <small>A DATA USAGE LICENSE INDICATES WHETHER THE DATA CAN BE REUSED OR NOT AND UNDER WHAT CONDITIONS. IF NO LICENCE IS GRANTED, THE DATA ARE IN A GREY ZONE AND CANNOT BE LEGALLY REUSED. DO NOTE THAT YOU MAY ONLY RELEASE DATA UNDER A LICENCE CHOSEN BY YOURSELF IF IT DOES NOT ALREADY FALL UNDER ANOTHER LICENCE THAT MIGHT PROHIBIT THAT.</small> <small>EXAMPLE ANSWER: E.G. "DATA FROM THE PROJECT THAT CAN BE SHARED WILL BE MADE AVAILABLE UNDER A CREATIVE COMMONS ATTRIBUTION LICENSE (CC-BY 4.0), SO THAT USERS HAVE TO GIVE CREDIT TO THE ORIGINAL DATA CREATORS."</small>	I will select journals that use one of, or something roughly equivalent to one of the following data license: Creative Commons Attribution-Noncommercial License (CC BY-NC), Creative Commons Attribution-No Derivatives License (CC BY-ND) or the Creative Commons Attribution License. Such licenses for published mathematics articles is the norm. For preprints I will use arXiv's "perpetual, non-exclusive license."
Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, please provide it here. <small>INDICATE WHETHER YOU INTEND TO ADD A PERSISTENT AND UNIQUE IDENTIFIER IN ORDER TO IDENTIFY AND RETRIEVE THE DATA.</small>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: a DOI will be added to each published article by the publisher.
What are the expected costs for data sharing? How will these costs be covered?	I expect essentially zero data sharing costs.

7. Responsibilities

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Who will manage data documentation and metadata during the research project?	Daniel Bath
Who will manage data storage and backup during the research project?	Daniel Bath
Who will manage data preservation and sharing?	Daniel Bath
Who will update and implement this DMP?	Daniel Bath

