# Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Reconnection-driven waves and oscillations in the flaring solar corona

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**Principal Investigator:** Philippa Browning

**Data Manager:** Philippa Browning

**Affiliation:** University of Manchester

**Template:** STFC Template Customised By: University of Manchester

**Project abstract:**

The overall aim is to investigate how waves and oscillations are generated by, and during, magnetic reconnection in the solar corona, in large-scale flares and smaller flare-like events associated with coronal heating, and to determine the observational signatures of these waves, particularly associated with non-thermal electrons. The approach is to utilise MHD reconnection simulations coupled to test-particles, and also the complementary Reduced Kinetics2 which more self-consistently models the kinetic and fluid physics. We will use recently-developed scenarios of magnetic reconnection and particle acceleration in solar flares, now focusing primarily on waves and oscillations hitherto largely ignored. The intention is thus to identify and analyse wave activity arising incidentally during reconnection in scenarios relevant to confined flares and coronal heating; conversely, we will not set up models specifically to create waves (thus, oscillatory driving will not be used). Forward-modelling will predict observational signatures, such as hard X-ray, UV, microwave and low-frequency radio emissions.

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**Copyright information:**

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# Reconnection-driven waves and oscillations in the flaring solar corona

## 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

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

- Acquire new data

The project will produce data from numerical simulations

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

- University of Manchester Research Data Storage

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

- 1 - 8 TB

**7. Will any of the data associated with this project be sourced from, processed or stored outside of the institutions and groups stated on your data sharing agreement?**

- No

**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 is what we call personal data and relates to living individuals. Special category data is sensitive information such as medical records, ethnic background, and sexual orientation for example. If you are not using personal data then you can skip the rest of this section.**

**Please note that in line with GDPR and data protection regulations, personal information should only be stored in an identifiable form for as long as is necessary for the project. You must obtain the appropriate ethical approval in order to use identifiable personal data.**

**9. What type of person identifying information will you be processing (please select all that apply)?**

- 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**

Not applicable

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

- Not applicable

**12. Sharing personal information can present risks to participants' privacy, researchers and the institution. Will any personal information or sensitive data be shared with an individual or organisation outside of the University of Manchester?**

- 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?**

Philippa Browning

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

27/01/2019

## Data types

**Specify the types of data the research will generate.**

The project will produce outputs of numerical simulations in the form of grids of spatially 2D and 3D magnetic fields and plasma variables at successive times, also particle distributions.
Published data will mainly be analyses of these larger datasets.

## Data preservation

**Specify which data will be preserved and how.**

Simulation outputs of production runs will be retained.
Also the codes from which the data are produced will be retained, with setup files

**Specify the software and metadata implications.**

The main software used are punlcly available LARE code, and GCA and RK codes which will be available on request.

**Specify for how long the data will be preserved.**

10 years

## Data sharing

**Specify and justify which data will have value to others and should be shared.**

Output files of key simulations will be retained and will be publicly available.
Codes to repeat the analyses will be available on request.

**Specify and justify the length of any proprietary period.**

No propietary period.

**Specify how data will be shared**

The data will be avialable as created, with documentaton.

## Resources

**Specify and justify any resources required to preserve and share the data.**

No additional resources required.