README file for Myers, et al. *Nature* letter titled, "A dynamic magnetic tension force as the cause of failed solar eruptions."

Each figure has an accompanying PDF of the figure itself and an HDF5 file of the archived figure data. The contents of each HDF5 file are described below.

Normalization factors used throughout:

- τ_A = 3.2 μs
- x_f = 18 cm

Figure 1: Representative stable and erupting flux rope discharges

- Note that the HDF5 file for this figure also contains the data for the Supplementary Video that accompanies this paper
- panel_a
    - No data
- panel_b
    - contour_data_stable
        - time_vec = time vector for the 'stable' contour [normalized to τ_A]
        - zapex_vec = height vector for the 'stable' contour [normalized to x_f]
        - Note that 'NaN' values are used to separate the individual contour segments
    - contour_data_erupting
        - time_vec = time vector for the 'erupting' contours [normalized to τ_A]
        - zapex_vec = height vector for the 'erupting' contours [normalized to x_f]
        - NaN values are inserted to separate individual contour segments
    - time_pts = the four time points expanded in (c), (d) [normalized to τ_A]
- panel_c
    - shot_number = MRX shot number for the data in this panel [Shot 153992]
    - time_vec = vector of frame times [normalized to τ_A]
    - Note that the data for all frames used to create Supplementary Video 1 are included in this HDF5 file. Only frames 147,152,157, and 162 are used in the print figure.
    - frame[000,270]
        - time_pt = time of the frame [normalized to τ_A]
        - color_data
            - [x,z]grid = *x,z* grid on which the color data are plotted [cm]
            - By_data = out-of-plane (poloidal) magnetic field data [G]
        - magax_data
            - [x,z]vec = *x,z* vectors for the magnetic axis contours [cm]
            - NaN values are inserted to separate the individual contour segments
        - image_data
            - image_index = frame number from the fast camera video
            - image_time = timestamp of the fast camera image [normalized to τ_A]
            - image = raw fast camera image data [monochrome]
- panel_d
    - Identical to panel_c, except for Shot 154172 instead of Shot 153992

Figure 2: The experimentally measured torus versus kink instability parameter space

- qa_vec = vector of ensemble-averaged edge safety factor, q_a [dimensionless]
- n_vec = vector of ensemble-averaged field decay index, n [dimensionless]
- dz_vec = vector of ensemble-averaged instability amplitude, $\langle \delta z \rangle / x_f$ [normalized to x_f]
- qa_thresh = empirically identified kink instability threshold window [dimensionless]
- n_thresh = empirically identified torus instability threshold window [dimensionless]

Figure 3: Magnetic analysis of a characteristic failed torus event

- shot_number = MRX shot number for the data in this figure [Shot 154410]
- panel_a:
  - time_vec_failed = time vector for this panel [normalized to τ_A]
  - height_vec_failed = height vector for the failed flux rope evolution [normalized to x_f]
  - time_pts = the four time points evaluated in (d), (e) [normalized to τ_A]
- panel_b:
  - time_vec = time vector for this panel [normalized to τ_A]
  - flux_pol_vec = vector of poloidal flux as a function of time [mWb]
  - flux_tor_vec = vector of toroidal flux as a function of time [mWb]
  - time_pts = the four time points evaluated in (d), (e) [normalized to τ_A]
- panel_c:
  - time_vec = time vector for this panel [normalized to τ_A]
  - Fh_vec = vector of the hoop force as a function of time [N/m]
  - Fs_vec = vector of the strapping force as a function of time [N/m]
  - FT_plus_Fs_vec = vector of the toroidal field forces plus the strapping force as a function of time [N/m]
  - time_pts = the four time points evaluated in (d), (e) [normalized to τ_A]
- panel_d, subpanels_[1,2,3,4]
  - annotation_data
    - electrode_[y,z]vec = y,z points for the electrode annotation [cm]
    - probe_pts_[y,z]vec = y,z locations of the magnetic field measurements [cm]
    - vessel_wall_[y,z]vec = y,z profile of the vacuum vessel wall [cm]
  - color_data
    - [y,z]grid = y,z grid on which the color data are plotted [cm]
    - JT_data = toroidal current density data [$\mathrm{MA \cdot m^{-2}}$]
  - vector_data
    - [y,z]grid = y,z grid on which the vector data are plotted [cm]
    - BP_v[y,z] = y,z vector components of the poloidal magnetic field [G]
- panel_e, subpanels_[1,2,3,4]
  - annotation_data = identical to panel_d
  - color_data
    - [y,z]grid = y,z grid on which the color data are plotted [cm]
    - BTi_data = internal (plasma produced) toroidal magnetic field data [G]

Figure ED-1: Experimental setup

- No data

Figure ED-2: Components of the potential magnetic field configuration

- No data

Figure ED-3: Magnetic analysis of a characteristic eruptive event

- Identical to Figure 3, except for Shot 153884 instead of Shot 154410

Figure ED-4: Sample *in situ* magnetic field measurements

- panel_a
  - shot_number = MRX shot number for the data in this panel [Shot 153992]
  - annotation_data
    - electrode[1,2]_[x,z]vec = *x*,*z* points for electrode 1,2 annotations [cm]
    - probe_pts_[x,z]vec = *x*,*z* locations of the magnetic field measurements [cm]
    - vessel_wall_[x,z]vec = *x*,*z* profile of the vacuum vessel wall [cm]
    - shifted_circle_[x,z]vec = *x*,*z* profile of the shifted-circle approximation for the magnetic axis [cm]
  - color_data
    - [x,z]grid = *x*,*z* grid on which the color data are plotted [cm]
    - BP_data = poloidal magnetic field data [G]
  - vector_data
    - [x,z]grid = *x*,*z* grid on which the vector data are plotted [cm]
    - BTi_v[x,z] = *x*,*z* vector components of the internal toroidal magnetic field [G]
  - magax_data
    - contour_[x,z]grid = *x*,*z* grid on which the magnetic axis is computed [cm]
    - contour_BP_data = out-of-plane poloidal magnetic field data for computing the magnetic axis [G]
    - contour_level = B_P contour level for computing the magnetic axis [G]
- panel_b
  - shot_number = MRX shot number for the data in this panel [Shot 154288]
  - annotation_data = identical to Fig. 3, panel (d)
  - color_data
    - [y,z]grid = *y*,*z* grid on which the color data are plotted [cm]
    - BTi_data = internal toroidal magnetic field data [G]
  - vector_data
    - [y,z]grid = *y*,*z* grid on which the vector data are plotted [cm]
    - BP_v[y,z] = *y*,*z* vector components of the poloidal magnetic field [G]
  - magax_data
    - magax_[y,z]val = spatial point where the magnetic axis is located [cm]

Figure ED-5: Height-time plots from four representative flux rope discharges

- panel_a
  - time = time vector for this panel [normalized to τ_A]
  - IT_mean = mean plasma current waveform [kA]
  - IT_stddev = standard deviation of the plasma current waveform [kA]
- panel_b, subpanel_[1,2,3,4]
  - shot_number = MRX shot number for the data in this panel
  - color_data
    - tgrid = time grid on which the color data are plotted [normalized to τ_A]

        - zgrid = z grid on which the color data are plotted [normalized to x_f]
        - By_data = out-of-plane magnetic field data [G]
    - contour_data
        - time_vec = time vector for the z_{apex} contours [normalized to τ_A]
        - zapex_vec = height vector for the z_{apex} contours [normalized to x_f]
        - time_vec_avg = time vector for the $\langle z_{apex} \rangle$ contours [normalized to τ_A]
        - zapex_vec_avg = height vector for the $\langle z_{apex} \rangle$ contours [normalized to x_f]
        - NaN values are inserted to separate individual contour segments

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Figure ED-6: Magnetic field and current density data for computing flux rope forces

- panel_left
    - annotation_data = identical to Fig. 3, panel (d)
    - color_data
        - [y,z]grid = y,z grid on which the color data are plotted [cm]
        - JT_data = toroidal current density data [$MA \cdot m^{-2}$]
    - vector_data
        - [y,z]grid = y,z grid on which the vector data are plotted [cm]
        - BP_v[y,z] = y,z vector components of the poloidal magnetic field [G]
    - magax_data
        - magax_[y,z]val = spatial point where the magnetic axis is located [cm]
    - contour_data
        - [y,z]grid = y,z grid on which the contours are computed [cm]
        - psi_data = poloidal flux function data for contour computation [$Wb \cdot m^{-1}$]
        - contour_levels_blue = levels used to plot the blue contours [$Wb \cdot m^{-1}$]
        - contour_level_red = level used to plot the single red contour [$Wb \cdot m^{-1}$]
- panel_right
    - annotation_data = identical to Fig. 3, panel (d)
    - color_data
        - [y,z]grid = y,z grid on which the color data are plotted [cm]
        - BTi_data = internal toroidal magnetic field data [G]
    - vector_data
        - [y,z]grid = y,z grid on which the vector data are plotted [cm]
        - JP_v[y,z] = y,z vector components of the poloidal current density [$MA \cdot m^{-2}$]
    - magax_data
        - magax_[y,z]val = spatial point where the magnetic axis is located [cm]
