Manual for ‘Disorientation’

(Android application of

MAP_STEEL_RANDOM_ORIENTATION)

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1. Intro

Intro picture is showing up for few seconds after the app starts, in order to load the main program as shown in Fig. 1a.

![Intro](image1)

Figure 1. Screen shots for (a) intro, (b) main and (c) function ‘1. Configuration’.

2. Main screen

Fig. 1b shows the main screen for the app, now five functions are available.

3. Functions

3.1. Configuration

User can set the default values for the ‘Number of grains’ and ‘Tolerance angle’ for the calculations in other functions as shown in Fig. 1c. After setting the values, user can confirm or cancel the changes using ‘Confirm’ and ‘Cancel’ buttons.
3.2. Euler angle <=> Miller index

User can convert the Euler angle to Miller index and vice versa as shown in Fig 2.

Figure 2. Screen shot ‘2. Euler angle <=> Miller index’ and some descriptions.
3.3. Disorientation between two orientations

User can calculate disorientation amongst two specific orientations in Euler angle or Miller index as shown in Fig 3.

Figure 3. Screen shot ‘3. Disorientation between two orientations’ and some descriptions.
3.4. Fraction of grains having specific orientation

User can calculate fraction of grains which have specific orientation within tolerance angle amongst given number of randomly generated grains in Euler angle or Miller index as shown in Fig 4. Fig. 5 shows the how the progress bar works.

![Fraction of grains having specific orientation](image)

**Figure 4.** Screen shot ‘4. Fraction of grains having specific orientation’ and some descriptions.
Figure 5. Screen shots for the progress bar: (a) before calculation, (b) on calculating, and (c) calculation finished.
3.5. Mackenzie plot

This function draws so-called Mackenzie plot (please see http://en.wikipedia.org/wiki/Misorientation), so that user can check the randomness of the system having different grains. Note that this process requires a lot of time for calculation especially for huge grain system, for example, over 1000 grains. If user wants to check the large grain system, please see ‘http://www.msm.cam.ac.uk/map/steel/programs/RANDOM_ORIENTATION.html’, which is the unix version of this application. Fig. 6 shows the screen shot for this function. The two examples are illustrated in Fig. 7.

![Figure 6. Screen shots '5. Mackenzie plot’ and some descriptions.](image)

![Figure 7. Two examples for Mackenzie plot: (a) 10 grains system and (b) 100 grains system.](image)
4. Any additional information

Please see ‘http://www.msm.cam.ac.uk/map/steel/programs/RANDOM_ORIENTATION.html’, which is the web page for the unix version of this application.