Jupyter Notebooks which create a modulated 2D artificial crystal with tuning knobs such as modulation size, modulation type, and modulation periodicity. Antiphase domain boundaries can also be added to the artificial crystal in the notebook Artifical\_2DCrystal\_ADB.

The diffraction pattern is calculated for every point on a 2D reciprocal space grid. We can compare the features on this grid to diffraction data obtained at the synchrotron to identify 2D modulation and antiphase domain boundary features in our samples.