

## Description of Additional Supplementary Files

**File Name:** Supplementary Movie 1

**Description:** In-situ Hall measurement combined with polar MOKE microscopy on device F ( $d = 800$  nm). We start in the field-polarized state in order to take a background image without any magnetic domain structures. The field was swept from  $-600$  mT to zero (blue arrows) and back (orange) until about  $-500$  mT in steps of  $5$  mT, as indicated by the “moving” vertical bar in the inset (showing Hall resistivity plotted against the external field). At approximately  $-500$  mT the sweep rate was reduced to  $1$  mT per step until the field-polarized state was reached again. Domain bands (associated with the spin-spiral phase) are visible on the way towards zero, right below the step-like change in the Hall resistivity at approximately  $-460$  mT. For increasing field, the domain bands slowly disintegrate into point-like objects (ASKs). The moment all bands have disappeared and the ASKs organize in a triangular-lattice structure, the Hall resistivity exhibits a clear change in slope. This additional Hall contribution is the Hall signature of the ASK phase (for further details see main text).