



Figure 3: FORC diagrams with increasing vortex effects.  $SF=4$  for all diagrams. a) 50 nm; b) 60 nm; c) 66 nm; and d) 76 nm. At these sizes, an ever larger fraction of the particle moments begin to switch with nonuniform magnetisations, i.e., vortex nucleation. At 76 nm all particles are in the single vortex remanent state. Dashed contour lines denote negative  $\rho$  values.