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Tailoring Artificial Skyrmions in single-crystalline Co/Ni/Cu(001) system JIA LI, ALI TAN, Z.Q. QIU, Department of Physics, University of California at Berkeley, Berkeley, California 94720, USA, TONY YOUNG, MATTHEW MARCUS, ANDREW DORAN, ELKE ARENHOLZ, PADRAIC SHAFER, Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, California 94720, USA, Z.Q.QIU TEAM, MATTHEW MARCUS COLLABORATION, ELKE ARENHOLZ COLLABORATION — Magnetic Skyrmions, which correspond to a topological spin texture pattern, were recently realized in several experimental systems as a result of Dzyaloshinsky-Moriya interactions (DMI). An alternative approach is to produce non-collinear spins in magnetic vortex states. With this motivation, we fabricated single crystalline Co disks on perpendicularly magnetized Ni/Cu(001) film to create artificial Skyrmions whose topology can be tailored by changing the relative orientation between the vortex core polarity and the surrounding perpendicular magnetization. In this way, we studied the topological effect of the Skyrmion using Photoemission Electron Microscopy (PEEM). By applying an in-plane magnetic field of various strength, we find strong evidence that the annihilation of the vortex core depends on the Skyrmion number of the system.

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