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**Neutron scattering study on the magnetic and superconducting phases of MnP** SHINICHIRO YANO, NSRRC, DIANE LANCON, HENRIK RONNOW, EPFL, THOMAS HANSEN, ILL, JASON GARDNER, NSRRC — We have performed series of neutron scattering experiments on MnP. MnP has been investigated for decades because of its rich magnetic phase diagram. The magnetic structure of MnP is ferromagnetic (FM) below  $T_C = 291$  K. It transforms into a helimagnetic structure at  $T_S = 47$  K with a propagation vector  $q = 0.117a^*$ . Superconductivity was found in MnP under pressures of 8 GPa with a  $T_{SC}$  around 1 K by J.-G. Cheng. Since Mn-based superconductors are rare, and the superconducting phase occurs in the vicinity of FM, new magnetic and helimagnetic phases, there is a need to understand how the magnetism evolves as one approach the superconducting state. MnP is believed to be a double helix magnetic structure at  $T_S = 47$  K. We observed new  $2\delta$  and  $3\delta$  satellite peaks whose intensity are  $200 \sim 1000$  times smaller than these of  $1\delta$  satellite peaks on the cold triple axis spectrometer SIKA under zero magnetic fields. We also found the periods of helimagnetic structure changes as a function of temperature. If time permits, we will discuss recent experiments under pressure. However, we have complete picture of magnetic structure of this system with and without applied pressure, revealing the interplay between the magnetic and superconducting phases.

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