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The origin and distribution of phosphorus in large size HP-Ge crystals GUOJIAN WANG, HAO MEI, GANG YANG, JAYESH GOVANI, MIANLIANG HUANG, YUTONG GUAN, DONGMING MEI, Department of Physics, University of South Dakota, ULTRA-LOW BACKGROUND EXPERIMENTS AT DAKOTA TEAM — The high-purity germanium (HP-Ge) crystals with 12 cm in diameter were grown by the Czochralski method in highly pure hydrogen (6N) atmosphere. Phosphorus is one of the important shallow level donors in the grown HP-Ge crystals. The radial and axial distribution of phosphorus in the grown crystals was studied using Hall Effect and Photo-thermal ionization spectroscopy (PTIS). The effect of pulling rate and rotation speed on segregation coefficient of phosphorus in HP-Ge was investigated. The origin of phosphorus was analyzed. We report the results in this paper.

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