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Orbital ordering in $Ba(Fe_{1-x}Co_x)_2As_2$ revealed by X-ray absorption Spectroscopy Y.K. KIM, W.S. JUNG, G.R. HAN, C. KIM, Yonsei Univ., K.-Y. CHOI, Seoul National Unv., A.P. SINGH, J.Y. KIM, Pohang accelerator lab., J. MIYAWAKI, Y. TAKATA, A. CHAINANI, Excitation order research team, RIKEN SPing-8 Center — Recently, anomalous in-plane anisotropy was observed by various experiment in iron pnictide systems. To explain the anomalous in-plane anisotropic behavior observed in iron pnictide system, orbital ordering was suggested as an origin of it. Among the various possible ordering, Ferroorbital ordering was proposed which occurs unequal occupation number of d_{yz} and d_{zx} orbital. it was theoretically predicted that such orbital ordering could be observed by performing X-ray Linear Dichroism experiment. To figure out, we performed the experiment on the most studied iron pnictide system, $Ba(Fe_{1-x}Co_x)_2As_2$. We obtained linear dichroism signal which indicates different occupation number for different orbital. And we observed temperature and doping dependence of the dichroism signal. Our results support the existence of ferro-orbital ordering.

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