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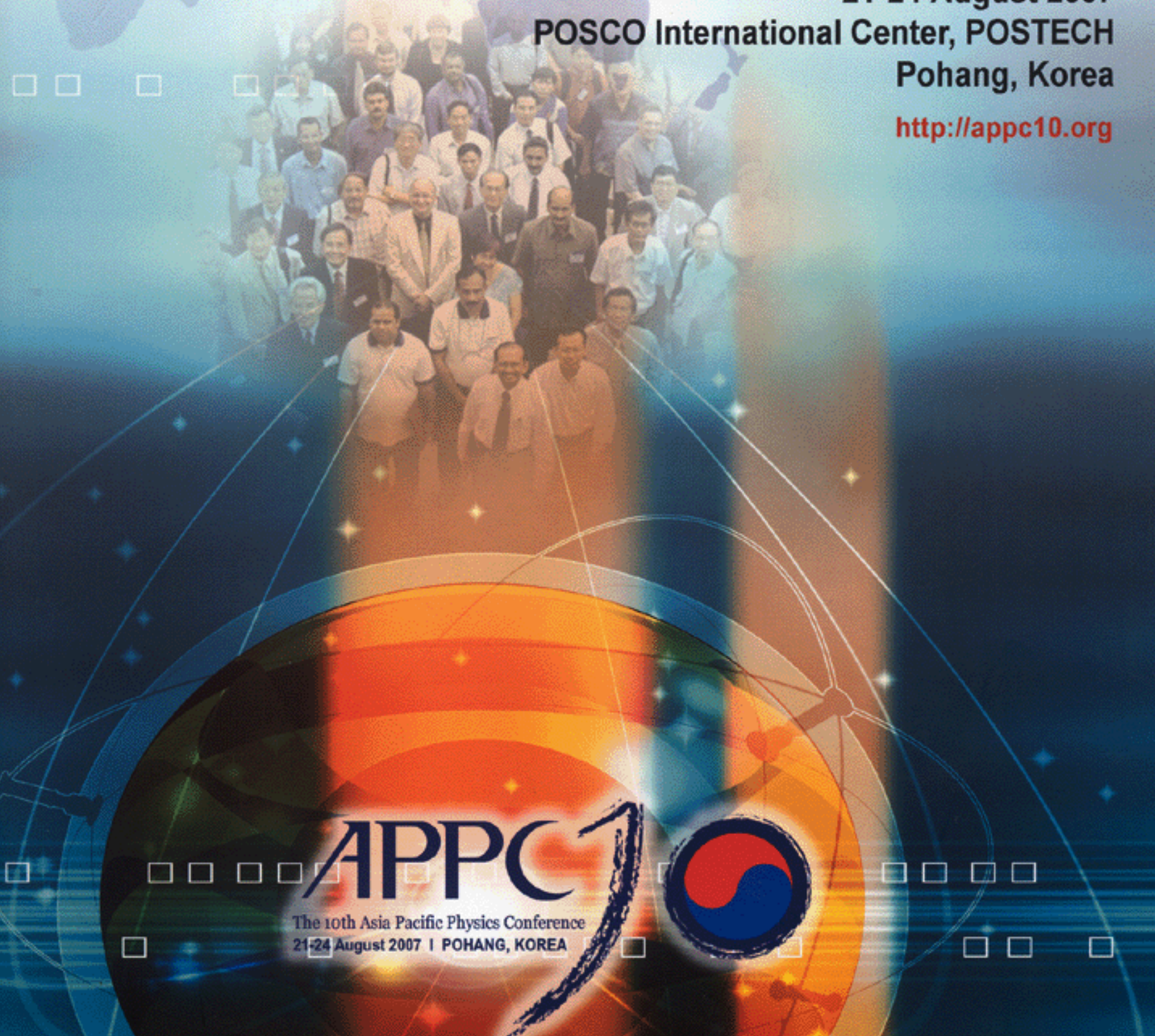


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[Ac2-P.042] **Change of hyperfine parameters in multiferroic $\text{HoMn}_{0.99}\text{Fe}_{0.01}\text{O}_3$** Sung Baek Kim¹, Kang Ryong Choi², Chul Sung Kim² (*Laboratory of Pohang Emergent Materials and Department of Physics, POSTECH, Pohang 790-784, Korea.*¹, *Department of Physics, Kookmin University, Seoul 136-702, Korea.*²) We have investigated Mössbauer spectra of $\text{HoMn}_{0.99}\text{Fe}_{0.01}\text{O}_3$ and the magnetic hyperfine interaction coupled with electric order parameter can be observed from Mössbauer spectra. The spectra below magnetic Néel temperature ($T_N = 72$ K) show one set of hyperfine split sextet and the spectra above T_N exhibit two lines with an equal intensity, indicating that the Fe^{3+} ions occupy the Mn^{3+} site of HoMnO_3 . The isomer shift value at room temperature is found to be 0.16 mm/s. The temperature dependence of electric quadrupole splitting values show sharp features at 5 K and 37 K. Also, the abrupt change of magnetic hyperfine field occurs simultaneously with the anomaly of dielectric constant $\epsilon(T)$. Using the Mössbauer technique we report evidence for the coupling of the electric and magnetic order parameters of HoMnO_3 and observed the transition temperatures accurately.

Keywords : Mössbauer, Electric quadrupole splitting, Magnetic hyperfine field, Multiferroic, HoMnO_3