

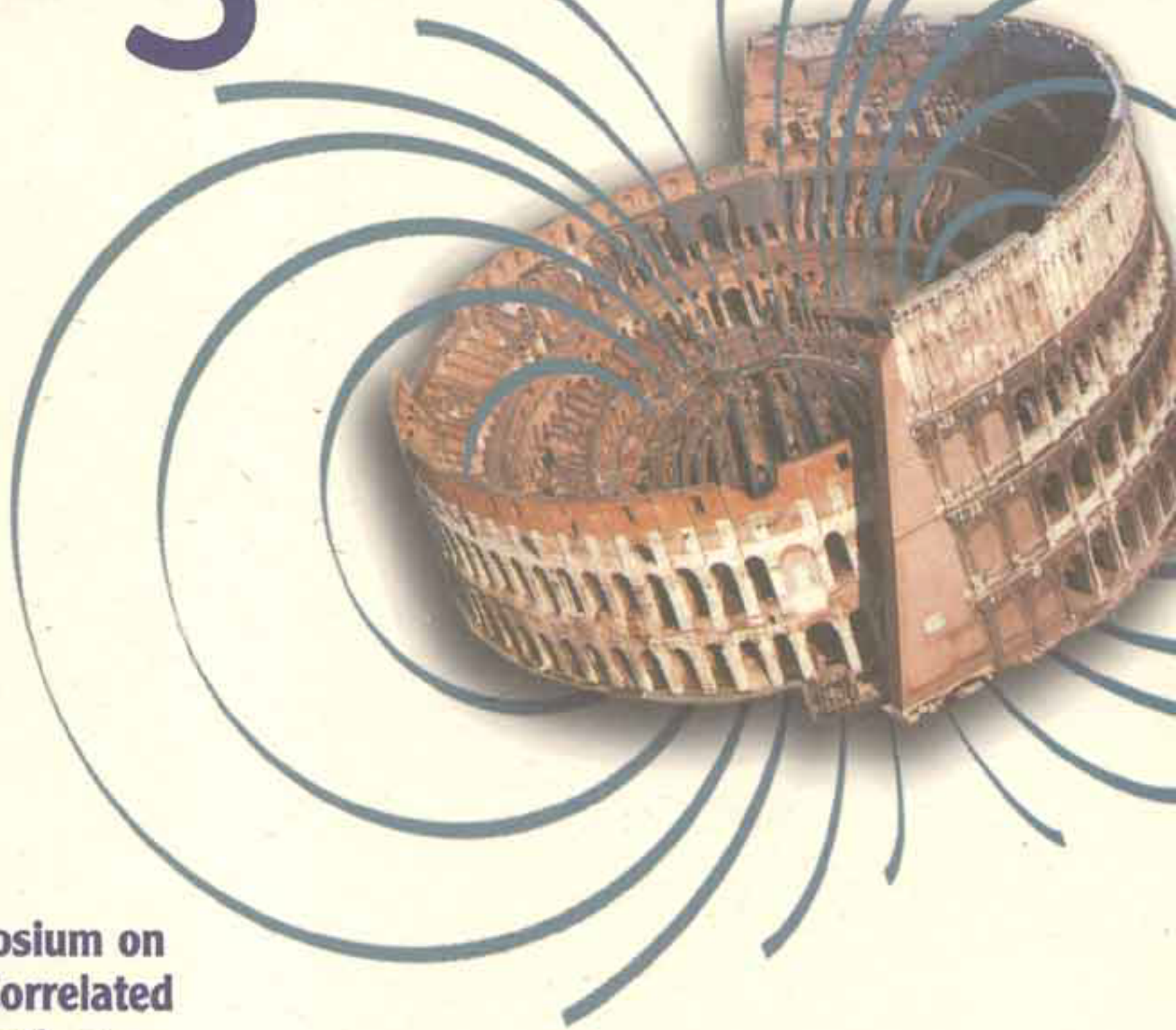
ICM 2003

ROMA, Italy • July 27 – August 1 • 2003

international
conference

on

Magnetism



Incorporating

**The Symposium on
Strongly Correlated
Electron Systems**

abstracts

5S-pm-17—— CORRELATION BETWEEN ANTI-SITE DISORDER AND MAGNETIC PROPERTIES IN ORDERED PEROVSKITE $\text{Sr}_2\text{FeMoO}_6$.

B. J. Park¹, H. Han¹, C. S. Kim², and B. W. Lee¹

¹Department of Physics, HUFS, Yongin, Kyungki 449-791, Korea;

²Department of Physics, Kookmin University, Seoul 136-702, Korea

We have investigated correlation between Fe/Mo disorder and magnetic properties in double perovskite $\text{Sr}_2\text{FeMoO}_6$ (SFMO). SFMO samples have been prepared by the conventional solid state reaction followed by sintering in a stream of 5% H_2/Ar at various sintering temperatures. The crystal structure and physical properties of the samples were examined by x-ray power diffraction, magnetization, and electrical resistivity measurements. The x-ray power diffraction pattern for polycrystalline SFMO shows a clean single phase without detectable secondary phases. The fact that superlattice lines are observed in x-ray diffraction pattern suggests the high degree of ordering of Fe and Mo in SFMO. Degree of Fe/Mo ordering in SFMO is controlled by thermal treatment conditions. As sintering temperatures increase from 900°C to 1400°C, anti site disorder decreases, magnetization measured under a magnetic field of 0.7T increases from 1.7 $\mu_B/\text{f.u.}$ to 3.5 $\mu_B/\text{f.u.}$, and Curie temperature increases from 377K to 405K. SFMO exhibits a sharp low-field magnetoresistance(MR). The magnitude of negative MR at room temperature decreases from 5.8%(sample prepared at 1200 °C) to 1.9%(sample prepared at 1400 °C).