

Abstract Submitted  
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**Tunnel electroresistance in ferroelectric tunnel junctions** A. CHANTHBOUALA, A. CRASSOUS, V. GARCIA, K. BOUZEHOUE, S. FUSIL, J. GROLLIER, C. DERANLOT, Unite Mixte de Physique CNRS/Thales, France, X. MOYA, N. MATHUR, University of Cambridge, UK, M. BIBES, A. BARTHELEMY, Unite Mixte de Physique CNRS/Thales, France — In tunnel junctions with a ferroelectric barrier, large resistance changes can arise upon switching the ferroelectric polarization direction. This tunnel electroresistance (TER) effect has recently been observed by scanning probe techniques on electrode/barrier bilayers (e.g. LSMO/BaTiO<sub>3</sub>), yielding giant TER values in the 50000% range at room temperature. Beside their fundamental interest to elucidate the interplay between electrostatic effects, changes in the interfacial density of states, piezoelectricity and quantum-mechanical tunneling, ferroelectric tunnel junctions undoubtedly present a great potential for application as memory devices with simple, non-destructive readout and low-power write operations. We will present our progress towards the realization of solid-state ferroelectric tunnel junctions and discuss their potential as next-generation non-volatile memories.

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