

Domain wall movement in magnetic nanowires and the Race-Track Memory

The discovery of the Giant Magnetoresistance served to boost the magnetic memory business through the introduction of new reading heads. Nevertheless the bit size and the head flying height is close to physical limits.

In order to insure the future for magnetic memories scientists have to study alternative memories. One of them is the "Race-Track" memory, a concept introduced by Stuart Parkin at IBM in 2004. This memory makes use of the domain walls to store information. This concept would allow the fabrication of memories without any mobile part. Certainly, this idea faces many challenges, from the control of the pinning of a Domain Wall to the control of its movement. In the talk we will describe the basis of the domain wall movement in a magnetic nanowire and we will review the challenges and recent advances.