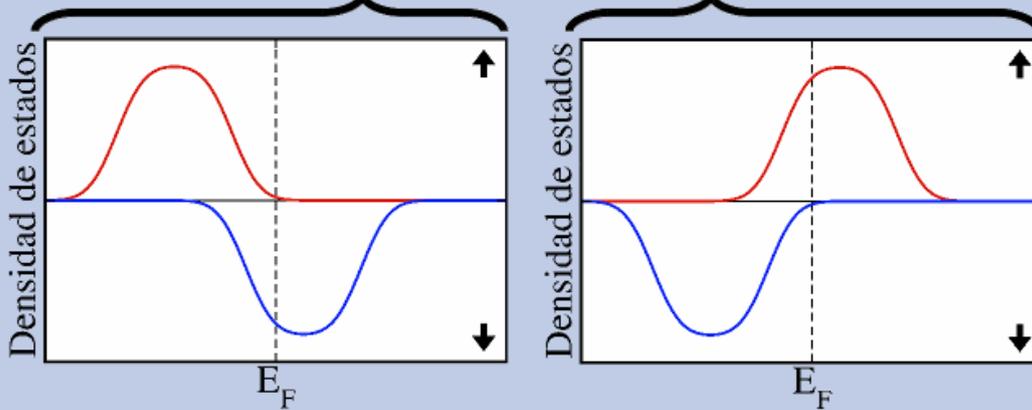
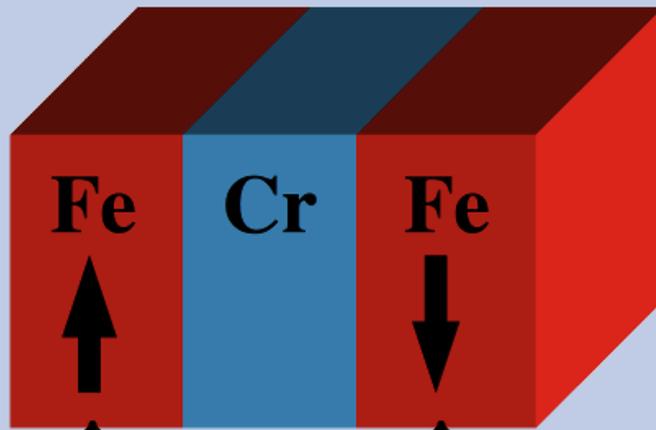
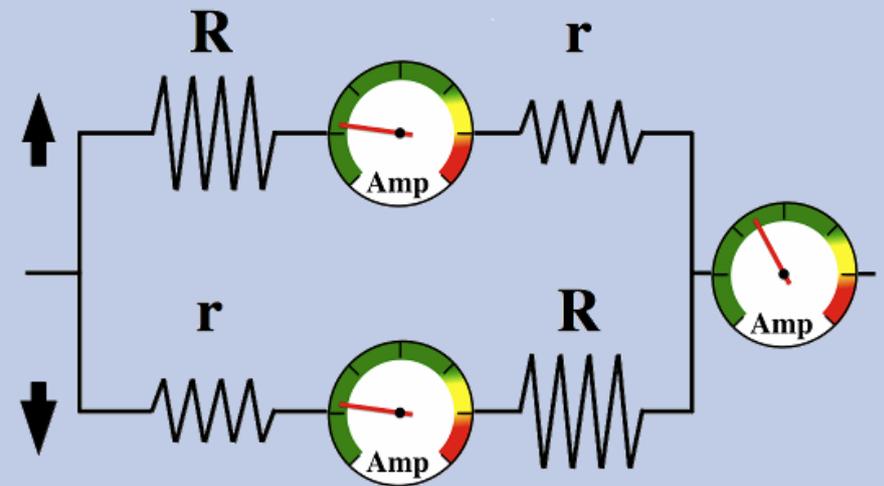


# Magnetorresistencia Gigante (GMR)

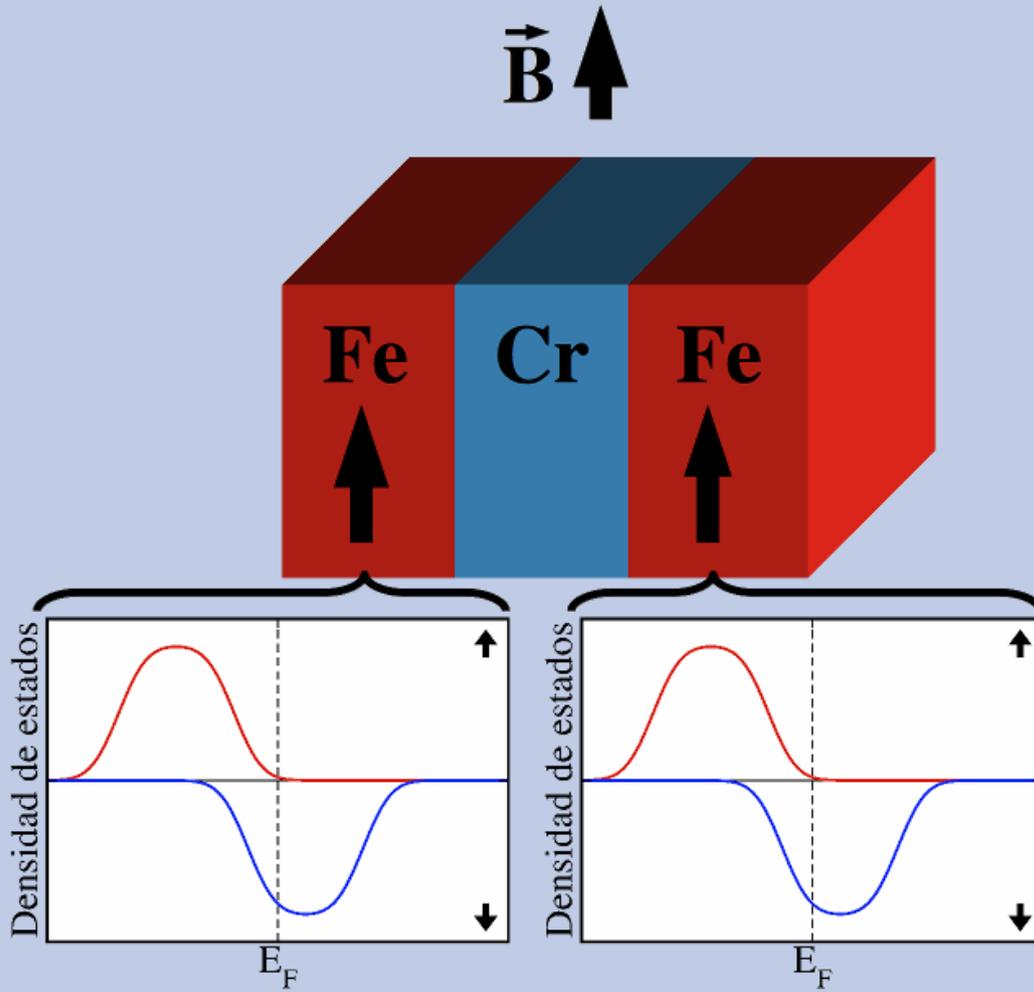
$$\vec{B}=0$$



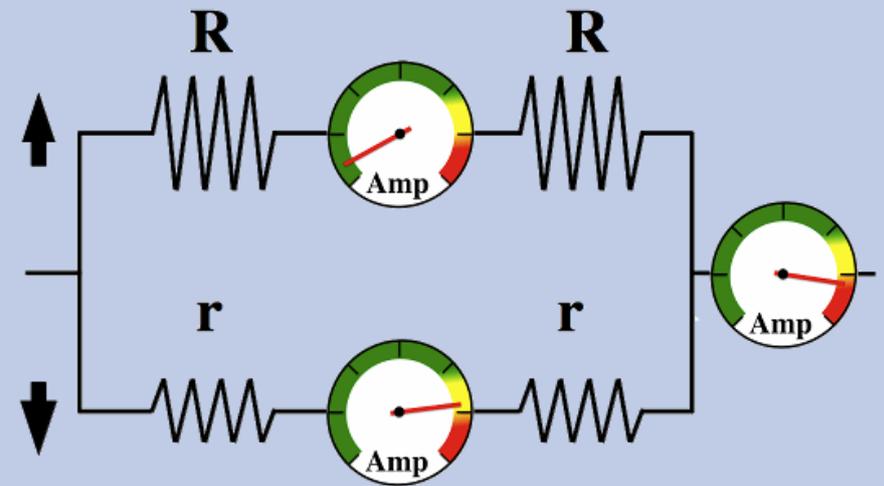
$$R_T = \frac{R+r}{2}$$



# Magnetorresistencia Gigante (GMR)



$$R_T = \frac{2Rr}{R+r} < \frac{R+r}{2}$$



# GMR: Premio Nobel Física 2007



Los Nobel de Física Albert Fert y Peter Grünberg- REUTERS / EFE

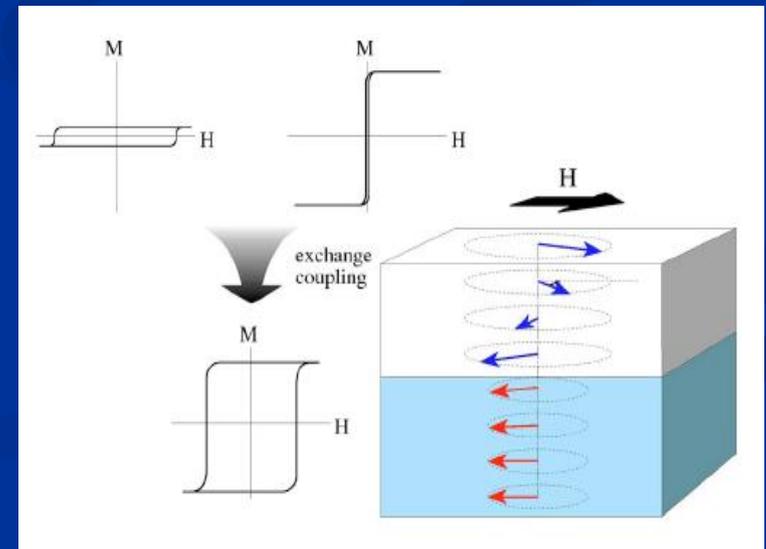
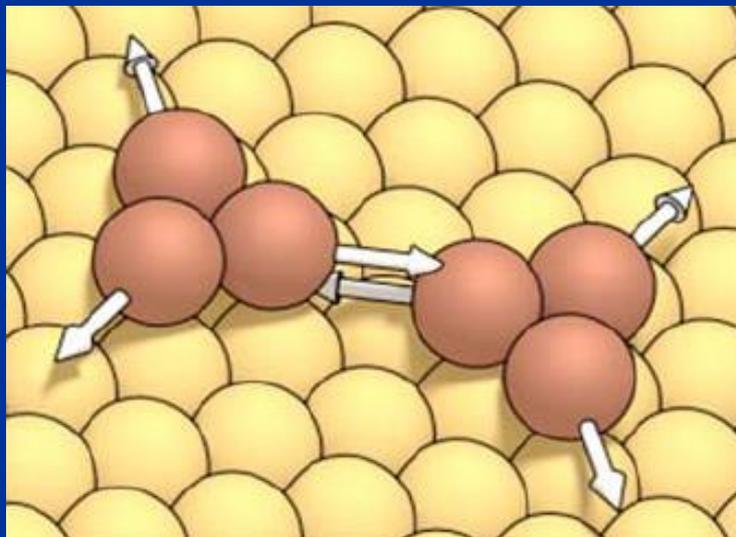
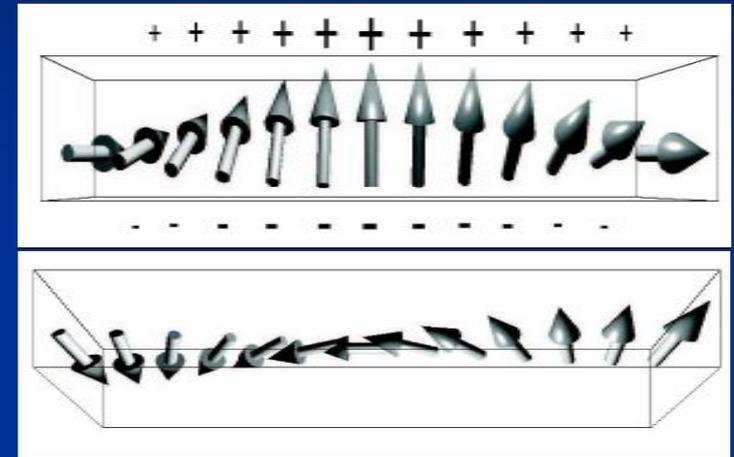
# Magnetismo no colineal. Ordenamientos magnéticos exóticos:

Paredes de dominio magnético

Muelles de spin

Sistemas con frustración magnética

...



¿ Cómo “ver” el orden magnético a escala local ?

## SP-STM/STS

(Spin-Polarized Scanning Tunneling Microscopy/Spectroscopy)

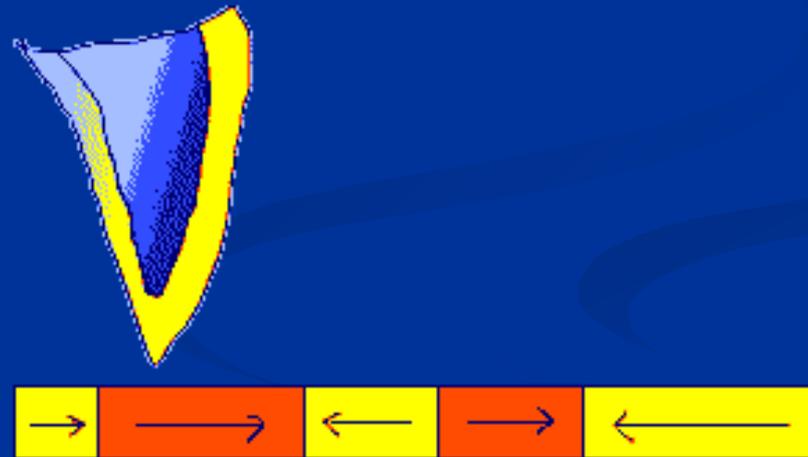
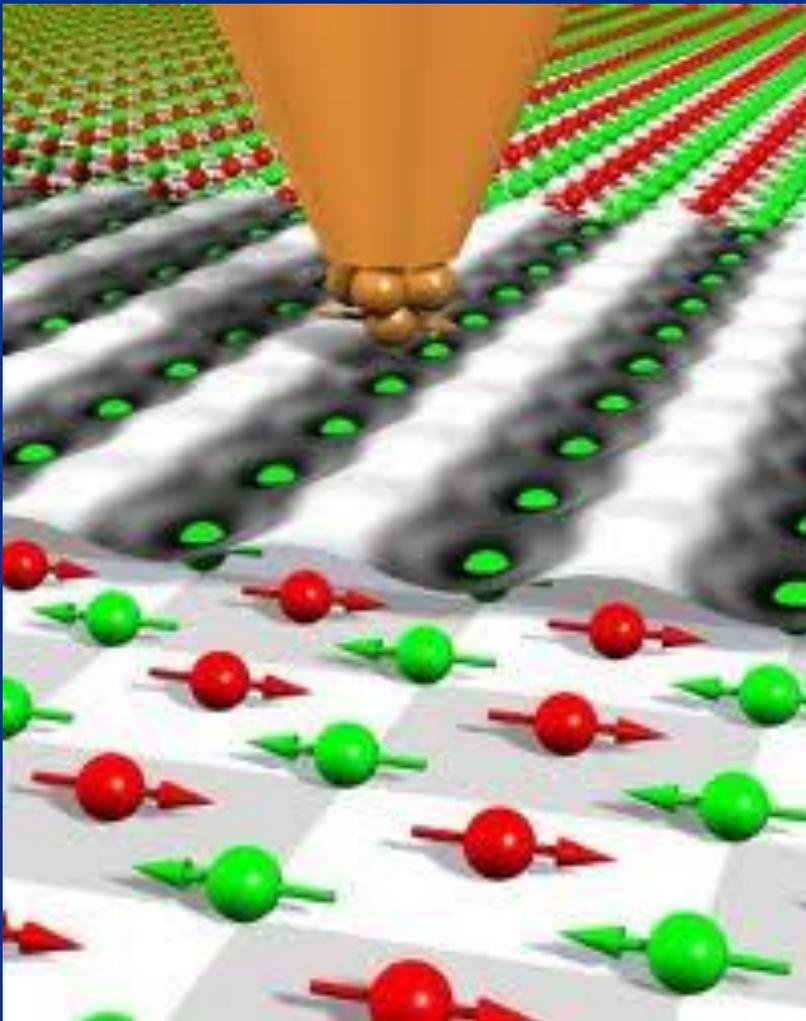
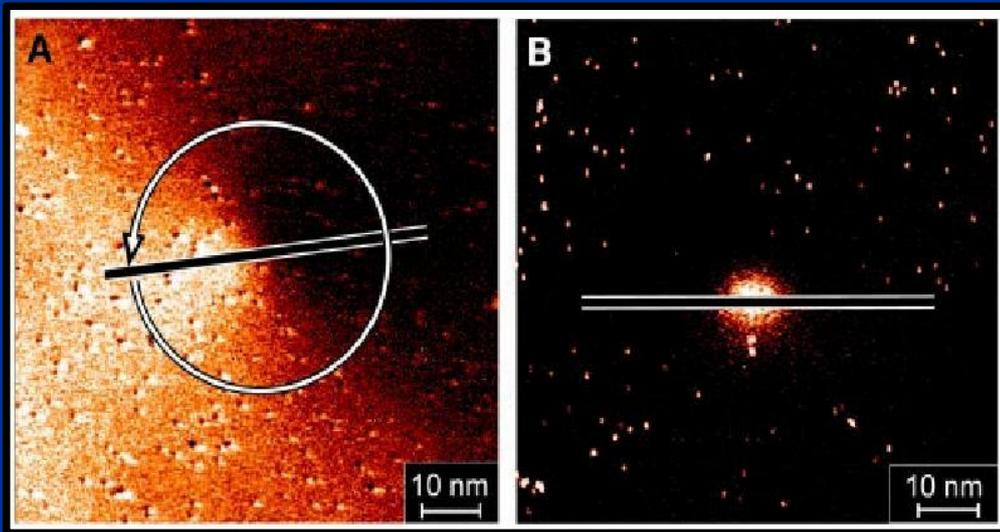


Imagen topográfica a corriente cte.

# Observación de magnetismo no colineal. Ejemplo pionero:

Vórtice magnético en nanoislas de Fe

Wachowiak *et al.*, *Science* 298, 577 (2002)



A. Magnetización en el plano

B. Magnetización perpendicular al plano

