



DIPARTIMENTO DI SCIENZE
MATEMATICHE E INFORMATICHE,
SCIENZE FISICHE E SCIENZE DELLA TERRA
Dottorato di Ricerca in Fisica

Appunti di Fisica '22

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su Microsoft Teams "Seminari di Appunti di Fisica"

Spintronics with antiferromagnets: fast, robust, and magnetoelastic

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Antiferromagnets are promising materials for information technologies as they combine fast internal dynamics and robustness towards magnetic field with high sensitivity to the electrical fields and currents. Here I overview the possible ways to manipulate antiferromagnetic states with spin and charge currents, and discuss underlying mechanisms. I will discuss the effects induced by spin-orbit torques of different nature and explain how they can be used for coding information on antiferromagnetic states. Further I will discuss magnetoelastic effects induced by inhomogeneous heating in antiferromagnetic layers and related switching mechanisms. I will also outline theoretical models used for description of magnetoelastic effects and discuss open problems in application to antiferromagnets.