T2_41 MAGNETIC INTERACTIONS: A MULTIMEDIA INTERACTIVE TUTORIAL

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Magnetic interactions, besides their intrinsic interest (in connection, for example, with technological applications of magnetism), constitute a didactical topic suitable to contextualize usefully the fundamental physical concept of field. Moreover, the magnetic properties of matter, in particular ferromagnetism, are usually poorly dealt (at least in italian high schools), nor the consequences of the inextricably dipolar nature of magnetism are explored at this scholar level. In this connection, by employing the Java programming language, we have developed an interactive tutorial on magnetic phenomena allowing learners to virtually manipulate magnets and ferromagnetic materials, visually exploring either the field-line pattern of a dipole approaching a ferromagnetic material, or the magnetization distribution of this latter. The tutorial starts by interactively illustrating the dipole-dipole interaction, and permits the exploration of the behavior of a ferromagnetic (spherical) objet when a permanent magnet approaches to it. Resulting magnetization is graphically shown together with the variation of interaction energy.