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【603】 Reversal time of a magnetic Cobalt nanoparticle with defects

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The long magnetic reversal time measured for selected nanoparticles cannot be rationalized with crystal, shape and surface anisotropies, suggesting the relevance of structural defects which are observed experimentally. We demonstrate here that the presence of stacking faults or twin boundaries in Co nanoparticles leads to the calculation of a transition rate, the inverse of the reversal time, that has the form of an Arrhenius law. The Arrhenius exponential as well as the prefactor present a dependence in particle diameter and number of defects which allow us to predict the experimental reversal times.

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