Einladung zum Physikalischen Kolloquium

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»Having Fun with Multiferroic Order Parameters«

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Multiferroics are materials simultaneously exhibiting magnetic and electric order. Requirements to "good multiferroics" are tough. They are supposed to have a spontaneous magnetization and a spontaneous polarization, preferably parallel to each other, with a strong magnetoelectric coupling between them to permit magnetization control by a small voltage rather than by an energy-intensive magnetic field. Because of all these requirements, multiferroics are typically described by a very complex set of order parameters — complex enough to fulfil so many conditions at once. With the world’s focus on electric-field-controlled magnetic order, it goes unnoticed that these degrees of freedom will permit many phenomena other than the coveted magnetoelectric coupling. In my talk, I will describe the quest for such phenomena in our group. They include a remarkable inversion of a domain configuration, a verification of post-Big-Bang processes in the universe and — believe it or not — a form of teleportation.