

Großes Physikalisches Kolloquium an der Universität zu Köln

Dr. Dimitri N. Argyriou

European Spallation Source, Lund, Sweden



The European Spallation Source: A Source for Discovery

Neutrons have been called beautiful because of their varied and unusual properties. The Nobel Laureate Bertram Brockhouse said of neutrons that if we did not have them, we would need to „invent them“ in order to study novel states of matter.

The basic advantage of neutrons are that they are charge neutral and thus highly penetrating, they obey conservation laws that allow us to probe both the time and spacial domains of materials, they possess a magnetic moment that makes them a probe of choice to investigate magnetism in materials and finally they exhibit sensitivity to light elements.

These properties allow us to use neutrons in a large variety of ways to examine materials from both the fundamental and technological perspective. It is for these reasons that neutrons are deployed on a diverse scientific areas such as archeology to ecology, from high-temperature superconductors to lipid membranes and proteins. The European Spallation Source (ESS), currently under construction in Lund Sweden, will be the brightest source of neutrons in the world, opening new horizons for materials research and fundamental physics. We shall look at some of the innovations of ESS that will enable transformative experiments using neutrons as well as at current trends in science that ESS can potentially impact.

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16⁴⁵ Uhr / HS III

