

Speaker: Roland Baumann

Title: *Understanding Totally Symmetric and Medial Quasigroups by a Study of Latin Squares and Their Isotopes*

#### Abstract

Latin Squares have been studied extensively since their appearance in mathematical literature in the 1700s. As late as the 1930s it was found that the fundamental structures underlying Latin Squares were a class of non-associative groupoids named quasigroups, which promptly became a focus of study in their own right. To penetrate the odd behavior of these quasigroups, we define isotopisms and autotopisms of Latin Squares and use the Latin Square - quasigroup duality to construct an equivalence relation on quasigroups. Taking the special case of quasigroups that are both totally symmetric and medial, we investigate some rather interesting isotopes that reveal a link to the much more familiar realm of Group Theory.