Title: Functional Equations for Zeta Functions of Groups and Rings

Speaker: Christopher Voll (University of Southampton, UK)

A finitely generated group has only finitely many subgroups of each finite index. The group's zeta function is the Dirichlet series encoding these numbers. If the group is nilpotent its zeta function admits an Euler product decomposition into local factors, indexed by the primes. These local factors have remarkable arithmetic properties.

One of their features is a beautiful palindromic symmetry: I shall report on recent work, establishing certain functional equations for the local factors of zeta functions of nilpotent groups. I will show how this can be achieved using techniques from the theory of Igusa's local zeta function associated to polynomial mappings, generalizing work of Denef and Meuser's and others.

I will also discuss variants of these zeta functions. Among them are zeta functions counting subgroups up to conjugacy, or counting just normal subgroups in nilpotent groups, representation zeta functions of nilpotent groups and zeta functions of torsion-free rings.