October 8

Marius van der Put, Rijksuniversiteit Groningen, visiting MSRI

The interaction of groups and differential equations

Linear differential equations over (say) the field of rational functions over $\mathbf{C}$ can be treated very much in the same way as ordinary polynomial equations over a field. There is a linear algebraic group G, the differential Galois group of the equation, which captures much of the features of the linear differential equation. We will present recent work on the inverse problem, i.e., the linear algebraic group G is prescribed and one wants to `construct' a differential equation with this group as differential Galois group.