



**Speaker:** Gareth Jones, University of Southampton.

**Title:** Regular dessins with primitive automorphism groups.

**Abstract:** This talk is based on joint work with Martin Mačaj (Bratislava). We classify the regular dessins  $D$  for which the automorphism group  $G$  acts primitively and faithfully on the points over one of the three critical values (without loss of generality the black vertices in the usual bipartite map representation). We show that they are all generalised Paley dessins, in which the black vertices are the elements of a finite field  $F_q$ , and  $G$  is a subgroup of the affine group  $\text{AGL}_1(q)$ . Using earlier work with Manfred Streit and Jürgen Wolfart we determine the orbits of the absolute Galois group on these dessins, we show that they are all defined over certain cyclotomic fields, and we obtain defining equations in some special cases. Relaxing the condition of a faithful action allows only cyclic regular coverings of these dessins. Similar but weaker results are available for more general Riemann and Klein surfaces, such as origamis.