

Umbrellas, and a dessin of genus 27421188300472320000000000000001

Abstract Abstract: Dessins d'enfants are combinatorial structures on compact Riemann surfaces defined over algebraic number fields. If G is a finite group, then there are just finitely many regular dessins with automorphism group G . I shall explain how to enumerate these dessins, and how to represent them all as quotients of a single regular dessin, the umbrella $U(G)$ of G . For example, if G is a cyclic group of order n then $U(G)$ is a map on the Fermat curve of degree n and genus $(n-1)(n-2)/2$. On the other hand, if G is the alternating group of degree 5, then $U(G)$ has genus 27421188300472320000000000000001. For other nonabelian finite simple groups G , the genus is somewhat larger.