1027-33-233 **Robert S. Maier*** (rsm@math.arizona.edu), Dept. of Mathematics, University of Arizona, Tucson, AZ 85721. *The 192 Solutions of the Heun Equation.*

The Heun equation is the canonical second-order differential equation on the Riemann sphere with four regular singular points, just as the Gauss hypergeometric equation (GHE) is the canonical equation with three. Kummer's 24 series solutions of the GHE, expressed in terms of ${}_2F_1$, are well known. The Heun equation has an analogous set of 192 solutions. Working them out explicitly, in terms of a canonical solution Hl, is in principle straightforward, but in practice requires careful machine computation. (Many published formulas have been incomplete or incorrect.) We explain how the first satisfactory computation of all 192 was performed. It was facilitated by the identification of the (non-affine) automorphism group of the Heun equation as the Coxeter group D_4. The solutions are naturally indexed by the elements of this order-192 group. (Received February 27, 2007)