1023-20-391 **Daniel P Groves*** (`groves@caltech.edu`), Mathematics 253-37, California Institute of Technology, Pasadena, CA 91125, and **Francois Dahmani**. *The Isomorphism Problem for toral relatively hyperbolic groups.*

We provide a positive solution to the isomorphism problem for torsion-free groups which are hyperbolic relative to free abelian subgroups. This implies and generalises: (i) An unpublished algorithm of Gerasimov to detect if hyperbolic groups admit a free product decomposition; (ii) partially unpublished work of Sela which solves the isomorphism problem for torsion-free hyperbolic groups; (iii) recent work of Kharlampovich and Miasnikov which shows that the Grushko and JSJ decompositions of limit groups can be computed effectively; and (iv) work of Bumagin, Kharlampovich and Miasnikov which solves the isomorphism problem for limit groups. We also provide a solution to the homeomorphism problem for finite-volume hyperbolic manifolds in dimension at least 3. (Received September 11, 2006)