

The following resources are used / mentioned in the lectures; papers are listed in the order they are mentioned in class. The main recommendation for further reading is the Handbook of Computational Group Theory. Alexander Hulpke's Lecture Notes and Derek Holt's lecture slides are also excellent treatments of this topic; both are linked at the end of this document.

### Books

- **Handbook of computational group theory.**  
D. F. Holt, B. Eick, E. A. O'Brien.  
Discrete Math. Appl. (Boca Raton). Chapman & Hall/CRC, Boca Raton, FL, 2005.
- Computation with finitely presented groups.  
C. Sims.  
Encyclopedia Math. Appl., 48. Cambridge University Press, Cambridge, 1994.
- Presentations of groups.  
D. L. Johnson.  
London Math. Soc. Stud. Texts, 15. Cambridge University Press, Cambridge, 1997.
- Permutation group algorithms.  
A. Seress.  
Cambridge University Press, 2003
- String-rewriting systems.  
R. V. Book, F. Otto.  
Texts Monogr. Comput. Sci. Springer-Verlag, New York, 1993.
- Combinatorial group theory.  
R. C. Lyndon, P. E. Schupp.  
Classics Math. Springer-Verlag, Berlin, 2001.
- Word processing in groups.  
D. B. A. Epstein, J. W. Cannon, D. F. Holt, S. V. F. Levy, M. S. Paterson, W. P. Thurston.  
Jones and Bartlett Publishers, Boston, MA, 1992.

### Papers

- *An elementary introduction to coset table methods in computational group theory.* J. Neubüser.  
London Math. Soc. Lecture Note Ser., 71. Cambridge University Press, Cambridge-New York, 1982, 1–45.
- *Some challenging group presentations.* H. Havas, D. F. Holt, P. E. Kenne, S. Rees.  
J. Austral. Math. Soc. Ser. A67 (1999), no. 2, 206–213.
- *Representing subgroups of finitely presented groups by quotient subgroups.* A. Hulpke.  
Experiment. Math. 10 (2001), no. 3, 369–381.
- *Collection from the left and other strategies.* C. R. Leedham-Green, L. H. Soicher.  
J. Symbolic Comput. 9 (1990), no. 5-6, 665–675.
- *Integer matrices and abelian groups.* G. Havas, L. S. Sterling.  
Lecture Notes in Comput. Sci., 72. Springer-Verlag, Berlin-New York, 1979, 431–451.
- *Application of computers to questions like those of Burnside.* G. Havas, M. F. Newman.  
Burnside groups (Proc. Workshop, Univ. Bielefeld, Bielefeld, 1977), 211–230.
- *Application of computers to questions like those of Burnside. II.* M. F. Newman, E. A. O'Brien.  
Internat. J. Algebra Comput. 6 (1996), no. 5, 593–605.
- *Descriptions of groups of prime-power order.* M. F. Newman, W. Nickel, A. C. Niemeyer.  
J. Symbolic Comput. 25 (1998), no. 5, 665–682.

- *Computing soluble groups*. J. W. Wamsley.  
Group theory (Proc. Miniconf., Australian Nat. Univ., Canberra, 1975), 118–125. Lecture Notes in Math., Vol. 573 Springer-Verlag, Berlin-New York, 1977.
- *Some recognizable properties of solvable groups*. G. Baumslag, F. B. Cannonito, C. F. Miller III.  
Math. Z. 178 (1981), no. 3, 289–295.
- *Towards a soluble quotient algorithm*. W. Plesken.  
J. Symbolic Comput. 4 (1987), no. 1, 111–122.
- *Implementing the Baumslag-Cannonito-Miller polycyclic quotient algorithm*. C. Sims.  
J. Symbolic Comput. 9 (1990), no. 5–6, 707–723.
- *A finite soluble quotient algorithm*. A. C. Niemeyer.  
J. Symbolic Comput. 18 (1994), no. 6, 541–561.
- *A polycyclic quotient algorithm*. E. H. Lo.  
J. Symbolic Comput. 25 (1998), no. 1, 61–97.
- *Algorithms determining finite simple images of finitely presented groups*.  
M. R. Bridson, D. M. Martin, M. W. Liebeck, D. Segal.  
Invent. Math. 218 (2019), no. 2, 623–648.
- *Algorithms for polycyclic-by-finite groups*. S. K. Sinanan, D. F. Holt.  
J. Symbolic Comput. 79 (2017), 269–284.
- *Testing for isomorphism between finitely presented groups*. D. F. Holt, S. Rees.  
London Math. Soc. Lecture Note Ser., 165. Cambridge University Press, Cambridge, 1992, 459–475.
- *Computation in word-hyperbolic groups*. D. B. Epstein, D. F. Holt.  
Internat. J. Algebra Comput. 11 (2001), 467–487.
- *Notes on word hyperbolic groups*.  
J. M. Alonso, T. Brady, D. Cooper, V. Ferlini, M. Lustig, M. Mihalik, M. Shapiro, H. Short.  
Group theory from a geometrical viewpoint (Trieste, 1990), 3–63. Edited by Short. World Scientific Publishing Co., Inc., River Edge, NJ, 1991.
- *Hyperbolic groups*. M. Gromov.  
Essays in group theory, 75–263. Math. Sci. Res. Inst. Publ., 8, Springer-Verlag, New York, 1987.
- *Universal covers of finite groups*. H. Dietrich, A. Hulpke.  
J. Algebra 569 (2021), 681–712.

#### Additional notes and slides

- *Notes on Computational Group Theory*. A. Hulpke.  
Notes, see <https://www.math.colostate.edu/~hulpke/CGT/cgtnotes.pdf>
- *Computing in Finitely Presented Groups*. D. F. Holt.  
Slides, see <http://tinyurl.com/4va9vt5>