

References for
The Cauchy Problem in General Relativity:
local and global results from initial data

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Daniel Pollack
University of Washington
Seattle, WA USA
pollack@math.washington.edu

The following books are references for background in General Relativity

- B1 Y. Choquet-Bruhat, *General relativity and the Einstein equations*, Oxford Mathematical Monographs. Oxford University Press (2009).
- B2 S. W. Hawking and G. F. R. Ellis, *The Large Scale Structure of Space-Time*, Cambridge University Press (1973).
- B3 C. Misner, K. Thorne and J.A. Wheeler, *Gravitation*, Freeman, Chicago, (1973).
- B4 H. Ringström, *The Cauchy Problem in General Relativity*, ESI Lectures in Mathematics and Physics. European Mathematical Society (EMS), Zürich, (2009).
- B4 R. Wald, *General Relativity*, Univ. Chicago Press, Chicago (1984).

There are a number of survey articles which provide excellent reference for aspects of these lectures. These are all freely available online

- S1 R. Bartnik and J. Isenberg, *The constraint equations*, The Einstein equations and the large scale behavior of gravitational fields, 138, Birkhäuser, Basel, (2004).
Available:
<http://arxiv.org/abs/gr-qc/0405092>
- S2 P.T. Chruściel, *lecture notes on the Cauchy problem*,
Available:
<http://homepage.univie.ac.at/piotr.chrusciel/teaching/Cauchy/Roscoff.pdf>
- S3 P.T. Chruściel, G. Galloway, and D. Pollack, *Mathematical general relativity: a sampler*, Bull. Amer. Math. Soc. (N.S.) **47** (2010), no. 4, 567–638.
Available:
<http://www.ams.org/journals/bull/2010-47-04/S0273-0979-2010-01304-5/home.html>
An extended version is available here:
<http://arxiv.org/abs/1004.1016/>

- S4 J. Corvino and D. Pollack, *Scalar Curvature and the Einstein Constraint Equations*, Surveys in Geometric Analysis and Relativity, ALM 20 International Press (2011) 145-188.
Available:
<http://arxiv.org/abs/1102.5050/>
- S5 H. Friedrich and A. Rendall *The Cauchy problem for the Einstein equations*, Springer Lecture Notes Physics. 540 (2000) 127-224
Available:
<http://arxiv.org/abs/gr-qc/0002074>
- S6 G. Galloway, *Beijing Lecture Notes on Spacetime Geometry*, Beijing International Mathematics Reserach Center (2007).
Available:
<http://www.math.miami.edu/~galloway/beijing.pdf>

The following research papers were the primary subject of Lectures 3 and 4, respectively

- R1 Y. Choquet-Bruhat, J. Isenberg, and D. Pollack, *The constraint equations for the Einstein-scalar field system on compact manifolds*, Class. Quantum Grav. 24 (2007) 809–828.
Available:
<http://arxiv.org/abs/gr-qc/0610045>
- R2 M. Eichmair, G. Galloway, and D. Pollack, *Topological Censorship from the initial data point of view*.
Available:
<http://arxiv.org/abs/1204.0278/>