Preface

Given initial data to Einstein's equations, there is a maximal globally hyperbolic development. This is a fundamental fact concerning the Cauchy problem in general relativity, and these notes are the consequence of a desire to understand the details of the proof of it. Concerning this result, there is material of an overview character available, as well as the original research articles. However, reconstructing a complete, detailed proof with these articles as a starting point is something that requires an effort, even for someone familiar with the fields involved. Since the Cauchy problem has received an increasing amount of attention the last 15 years or so, it seems natural to write down all the details in a coherent fashion. Those potentially interested in understanding the proof come from many different fields of mathematics, and for this reason, the goal of these notes has been to keep the prerequisites at a minimum.

Stockholm, April 2009   Hans Ringström