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Iva Stavrov* (istavrov@lclark.edu), Department of Mathematical Sciences, Lewis and Clark College - MSC 110, 0615 SW Palatine Hill Road, Portland, OR 97219. *Gluing constructions in general relativity*. Preliminary report.

The initial data in general relativity consist of a 3-dimensional Riemannian manifold equipped with a symmetric 2-tensor and (in a non-vacuum case) some non-gravitational fields; loosely speaking we can think of these data as describing the universe "now". In order for the physically meaningful "time" evolution to exist, the above mentioned tensors have to satisfy the so-called Einstein constraint equations. Finding solutions to these constraint equations has received the attention of the geometry community. Gluing techniques are a common way of constructing new solutions from old. Following an introduction to the topic, the speaker will illustrate the results of two gluing projects in which she has been involved. (Received July 23, 2008)