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## Three-parameter solution for the null-surface formulation in 2+1 dimensions

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The null-surface formulation (NSF) of general relativity is equivalent to standard general relativity but uses families of null surfaces rather than the metric or a connection. The NSF can be constructed in dimension 3+1, in any dimension higher, and also in dimension 2+1, which is a special case: In 2+1 dimensions, the main NSF field equation is equivalent to Cartan's metricity condition. The latter arose in differential equation theory to address the problem of classifying solutions of third-order ordinary differential equations. Solving the NSF/Cartan equation has proved challenging, and only three solutions are known to date. This talk presents a fourth solution, which depends upon three independent parameters. Two of the previously known solutions are included as special cases. Energy conditions, Petrov classification, and possible source terms are examined. The physical interpretation is discussed in detail.

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