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Elliot Kaplan* (eakapla2@illinois.edu). *Logarithmic Hyperseries and Hyperserial Fields.*

In joint work with Lou van den Dries and Joris van der Hoeven, we constructed the field \mathbb{L} of logarithmic hyperseries. This is a proper class-sized ordered differential field which is also equipped with a composition and hyperlogarithm functions (which act like transfinite iterates of a logarithm function). In subsequent joint work with Vincent Bagayoko and Joris van der Hoeven, we introduced the more general notion of a hyperserial field (of type **On**). These proper class-sized fields admit an external composition over the field of logarithmic hyperseries. We showed that each hyperserial field has a minimal hyperserial field extension in which each hyperlogarithm is bijective on the class of positive infinite elements. In this talk, I will discuss both of these works and their connection with transseries, logarithmic transseries, and the surreal numbers. (Received February 02, 2020)