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**Peter A Loeb\*** ([loeb@math.uiuc.edu](mailto:loeb@math.uiuc.edu)), Department of Mathematics, University of Illinois, 1409 West Green Street, Urbana, IL 61801. *Nonstandard Analysis Applied to Ideal Boundaries*. Preliminary report.

The speaker has applied nonstandard analysis to three aspects of ideal boundary theory: Attaching appropriate boundaries to potential theoretic domains, constructing measures on boundaries that represent nonnegative harmonic functions, finding boundary approach neighborhoods that yield appropriate limits at boundary points. The original, motivating application of the speaker's work on measure theory was a nonstandard construction of standard representing measures for nonnegative harmonic functions. This work yielded new standard weak convergence methods for constructing such measures on spaces of extreme harmonic functions in very general settings. The search for a Martin-type ideal boundary for the placement of those measures missed, but a new almost everywhere regular boundary that supported the representing measures for a large subclass of nonnegative harmonic functions was produced and intensively investigated by Juergen Bliedtner and the speaker. In this talk, we review this background and then return to the problem of constructing an appropriate boundary associated with the nonstandard construction of general representing measures. (Received January 11, 2010)