1051-35-157   **Yuri A. Melnikov*** (`ymelniko@mtsu.edu`), 1301 E. Main Street, Murfreesboro, TN 37132.
Computer-friendly representations of Green's functions for Laplace and Klein-Gordon equations.

The classical scheme of the method of eigenfunction expansion is analyzed as applied to the construction of Green's functions for a number of different boundary-value problem settings for the two-dimensional Laplace and Klein-Gordon equations. Resulting Green's functions are represented, within this method, in a series form. Such representations are not quite suitable for immediate computer implementation because the series are not (and cannot be, due to the singular character of Green's functions) uniformly convergent. The emphasis in this talk is put on such a technique which transforms the series expressions of Green's functions into a computer-friendly form. This becomes possible by splitting off those components of the series expressions of Green's functions, which are responsible for their singular components. Numerous graphical illustrations bring a confidence in the potential of the suggested technique. (Received August 23, 2009)