1023-65-1734 **Yassine Boubendir*** (boubendi@math.umn.edu), School of Mathematics, University of Minnesota, 127 Vincent Hall 206 Church St., S. E., Minneapolis, MN 55455, and **Fernando Reitich** (reitich@math.umn.edu), School of Mathematics, University of Minnesota, 127 Vincent Hall 206 Church St., S. E., Minneapolis, MN 55455. *Acceleration of an iterative method for the evaluation of high-frequency multiples scattering effects.*

Recently a new approach was introduced for the solution of high-frequency scattering problems that can evaluate scattering returns at arbitrarily high frequencies in frequency-independent computational times. The initial implementation was restricted to single scattering configurations, but it was later extended to account for multiple scattering through an iterative procedure. In this talk, we shall review these schemes in their full three-dimensional versions and we shall further present a new technique to accelerate the convergence of multiples scattering iterations. This technique is based on the use of Krylov-subspace methods and, as we shall show, it can significantly decrease the number of iterations necessary to attain a given accuracy. Moreover, we will show that substantial additional gains can be garnered through the use of an appropriately preconditioned version of this procedure. (Received September 26, 2006)