Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

Along-track Gradients and Stratified Wake Green Functions
DAVID VASHOLZ, Johns Hopkins University Applied Physics Laboratory — In the context of linear stratified equilibrium wakes an approximation that consists of removing the along-track gradient term from the source equation is considered. An analysis is carried out in terms of Green functions and a formal solution is derived that directly displays the simplifying effects of this approximation. A complementary analysis is performed that reinterprets the modal expansion appearing in the formal solution in terms of critical speed eigenvalues. It is then shown how the neglect of the along-track gradient amounts to a high Froude number approximation. Detailed results are shown for the case of a uniform buoyancy frequency, where the validity of the high Froude number approximation is examined as a function of source speed.

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Date submitted: 06 Aug 2007 Electronic form version 1.4