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Dear Editors,

My co-authors and I would like to submit the attached manuscript to be considered for publication in the Journal of the Acoustical Society of America. In this paper we present an effective strategy for accelerating the computation of nonlinear acoustic fields generated in high-intensity focused ultrasound (HIFU) applications. The approach presented is appropriate for time-harmonic and weakly nonlinear fields, as it uses these properties to decompose the field into the separate harmonic contributions and compute them on meshes tailored to each harmonic. As the higher harmonics are localised around the focus of the HIFU beam, these meshes can be contracted, leading to a large reduction in computational cost. We study the extent to which these meshes can be contracted by employing a computation technique based on volume potentials. We believe the techniques and results presented in this work have the potential to improve the efficiency of many numerical schemes used in HIFU simulations and, as such, will be of interest to the HIFU modelling and nonlinear acoustics communities.

For referees, we believe that all of the following have interests and expertise that would align well with the topics of this submission:

David Sinden, Fraunhofer MEVIS, Germany
Jon Trevelyan, University of Durham, United Kingdom
Jonathan Hargreaves, University of Salford, United Kingdom
Ivan Graham, University of Bath, United Kingdom

Thank you for your consideration,

Samuel Groth