

On the numerical solution of the far field refractor problem

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I will show an algorithm to construct far field one source refractors with arbitrary precision. The ideas originate in the work of Caffarelli, Kochengin and Oliker developed in the context of far field point source global reflectors. For our refraction problem, we are able to simplify and extend these ideas to deal with densities that are only bounded and work in general domains. In particular, we do not need to consider derivatives of the refractor measure, we only need to prove an appropriate Lipschitz bound for the refractor measure which considerably simplifies the approach proposed by [CKO99]. In addition, our approach does not use the mass transport structure of the far field problem, and therefore it can be used in near field problems. A numerical implementation is carried out and examples will be shown.

This is joint work with Roberto De Leo and Henok Mawi.

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