

Regularity results for the near field parallel beam refractor problem

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Abstract: We construct optical surfaces separating two media with different refractive indices, that transmit radiation emanating from a domain in a collimated beam, to a prescribed target destination. The input and output intensities are prescribed. Under local assumptions on the target, we prove local Holder estimates of the gradients of the surfaces. No regularity assumptions on the intensities are made. Similar results are also obtained for the parallel beam reflector. This is joint work with Federico Tournier.