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**Natan Kruglyak\*** ([natan@ltu.se](mailto:natan@ltu.se)), Department of Mathematics, Lulea University of Technology, SE-971 87 Lule, Sweden. *Limiting Case of the Marcinkiewicz Integral and Fefferman-Stein Maximal Theorem.*

The Marcinkiewicz integral plays a well-known and prominent role in harmonic analysis. We consider the limiting case of it and show its relationship with the maximal theorem by Fefferman and Stein, potential theory, the Poisson equation, exponential transform, and a lemma in Carleson's celebrated proof of Luzin's conjecture. We assume that the domain is convex and show that this condition cannot be dropped. (Received January 30, 2006)