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**Loredana Lanzani\*** (llanzani@syr.edu) and **Elias M. Stein**. *On regularity and irregularity of the Cauchy-Szegő projection in several complex variables*. Preliminary report.

It is known that for domains  $D \Subset \mathbb{C}^n$  that are of class  $C^2$  and are strongly pseudo-convex, the Cauchy-Szegő projection is bounded in  $L^p(\text{b}D, d\Sigma)$  for  $1 < p < \infty$ . (Here  $d\Sigma$  is induced Lebesgue measure.) We show, using appropriate worm domains, that this fails for any  $p \neq 2$ , when we assume that the domain in question is only weakly pseudo-convex. Our starting point are the ideas of Kiselman-Barrett introduced more than 30 years ago in the analysis of the Bergman projection. However the study of the Cauchy-Szegő projection raises a number of new issues and obstacles that need to be overcome. We will also compare these results to the analogous problem for the Cauchy-Leray integral, where however the relevant counter-example is of much simpler nature. (Received January 24, 2019)