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Pedro Valentin De Jesus* (pedro-valentindejesus@uiowa.edu), The University of Iowa, 14 MacLean Hall, 2 West Washington Street, Iowa City, IA 52242. *On a Sharp Isoperimetric Inequality for a Constrained Region*. Preliminary report.

In this work we focus on a sharp Isoperimetric Inequality for convex domains of arbitrary dimension with the constraint of having its boundary contained in a prescribed minimal n -spherical shell. The scale-free Isoperimetric deficit of a region within the n -Euclidean space is a measure of how deformed this region is from the n -ball. This invariant has been extensively studied, we depart from B. Fuglede's contribution. He proves that for nearly spherical or convex domains one can bound from below the Isoperimetric deficit by a function in terms of the n -spherical shell's thickness containing the boundary of such domain. In this talk, we will discuss our attempt to improve his results where only an order estimate for a function bounding below the isoperimetric deficit is given. (Received September 13, 2020)