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Title: Elliptic estimates for a three dimensional prescribing curvature equation with boundary conditions

Abstract: Let u be a positive smooth function that satisfies the following three dimensional Yamabe type equation:

$$\begin{cases} \Delta u + K(x)u^5 = 0 & B_{3R}^+ \subset \mathbb{R}^3 \\ \partial_3 u = c(x')u^3 & \partial B_{3R}^+ \cap \partial \mathbb{R}_+^3. \end{cases}$$

If K and c are C^1 functions and K is strictly positive, then u satisfies

$$\max_{\bar{B}_R^+} u \cdot \min_{\bar{B}_{2R}^+} u \leq CR^{2-n} \quad \text{and} \quad \int_{B_R^+} |\nabla u|^2 + u^6 \leq C.$$