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Mathew R Gluck* (mgluck@ufl.edu), 358 Little Hall, PO box 118105, Gainesville, FL 32611,
and **Ying Guo** and **Lei Zhang**. *A Harnack-Type Inequality for a Prescribing Curvature Equation
on a Domain with Boundary.*

In this paper we use the method of moving spheres to derive a Harnack-type inequality for positive solutions of

$$\begin{cases} \Delta u + K(x)u^{(n+2)/(n-2)} = 0 & x \in B_1^+ \subset \mathbb{R}_+^n \\ \frac{\partial u}{\partial x_n} = c(x)u^{n/(n-2)} & x \in \partial B_1^+ \cap \partial \mathbb{R}_+^n, \end{cases}$$

where $n \geq 4$, \mathbb{R}_+^n is the upper half-space and B_1^+ is the upper half unit ball. Under suitable assumptions on $K(x)$ and $c(x)$, we show that there is a positive constant C such that for all positive solutions u , a Harnack type inequality holds.

As a consequence of this inequality we obtain the following energy estimate

$$\int_{B_{1/2}^+} \left(u^{\frac{2n}{n-2}} + |\nabla u|^2 \right) dx \leq C.$$

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