

**Mawhin, Jean**

**Nonlinear boundary value problems involving the extrinsic mean curvature operator.** (English) [Zbl 1340.35092](#)

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Summary: The paper surveys recent results obtained for the existence and multiplicity of radial solutions of Dirichlet problems of the type

$$\nabla \cdot \left( \frac{\nabla v}{\sqrt{1 - |\nabla v|^2}} \right) = f(|x|, v) \quad \text{in } B_R, \quad u = 0 \quad \text{on } \partial B_R,$$

where  $B_R$  is the open ball of center 0 and radius  $R$  in  $\mathbb{R}^n$ , and  $f$  is continuous. Comparison is made with similar results for the Laplacian. Topological and variational methods are used and the case of positive solutions is emphasized. The paper ends with the case of a general domain.

**MSC:**

**35J93** Quasilinear elliptic equations with mean curvature operator

**35J20** Variational methods for second-order elliptic equations

**35J60** Nonlinear elliptic equations

**35B09** Positive solutions to PDEs

**35B38** Critical points of functionals in context of PDEs (e.g., energy functionals)

**35B07** Axially symmetric solutions to PDEs

Cited in 4 Documents

**Keywords:**

extrinsic mean curvature operator; Dirichlet problem; radial solution; positive solution; Leray-Schauder degree; critical point theory

**Full Text:** [Link](#)