

Solving a phi-Laplacian problem using the Prüfer Transformation.

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In this presentation, we will provide a concise overview of the Prüfer transformation. As a practical illustration, we prove the existence of infinitely many sign-changing radial solutions for a Dirichlet problem in the unit ball in $\mathbb{R}^N$. This involves the ϕ -Laplacian operator defined by $\Delta_\phi u = \operatorname{div}(\phi(|\nabla(u)|)\nabla u)$ where $\phi(u) := |u|^{p-2}(1+u^2)^{-m/2}$, $p > 2$, $m > 0$. Furthermore, the nonlinearity, g , is defined as $g(u) = u^{q_1}$ if $u \geq 0$ and $g(u) = -|u|^{q_2}$ if $u < 0$, where $2 < p < q_1 + 1 < Np(q_1 + p - 1)/[Nq_1 + (p - 1)(N - p)]$ and $q_2 > p^* - 1$.

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