By invitation of Prof. Dr. Peter Takáč, Ph.D.,

Prof. Dr. i.R. Friedemann Brock
(Univ. Leipzig/Halle/Rostock)

speaks on the topic

Symmetry and stability of non-negative solutions to degenerate elliptic equations in a ball

Online event via Zoom
Tuesday, 01. March 2022, 14:00
We cordially invite all interested persons to this lecture.

Abstract:

We consider non-negative distributional solutions $u \in C^1(B_R)$ to the equation $-\operatorname{div}[g(|\nabla u|)|\nabla u|^{-1}\nabla u] = f(|x|, u)$ in a ball B_R, with $u = 0$ on ∂B_R, where f is continuous and non-increasing in the first variable and $g \in C^1(0, +\infty) \cap C[0, +\infty)$, with $g(0) = 0$ and $g(t) > 0$ for $t > 0$.

According to a now classical result of the speaker, the solutions satisfy a certain "local"type of symmetry. Using this, we first prove that the solutions are radially symmetric provided that f satisfies appropriate growth conditions near its zeros. In the second part we study the autonomous case, $f = f(u)$. The solutions of the equation are critical points for an associated variational problem. We show under rather mild conditions that global and local minimizers of the variational problem are radial.