

# Applied Analysis Seminar

Thursday, May 4th  
14:15, SR 1

Institut für Angewandte Mathematik  
Mathematikon

## On a Lane-Emden type equation of higher order and related equations

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In this talk, we discuss a Lane-Emden type equation of higher order with a supercritical polynomial non-linearity

$$(-1)^m \Delta^m u = |u|^{p-2} u$$

$m \in \mathbb{N}$  with  $n > 2m$  and  $p > p^* = \frac{2n}{n-2m}$ . For  $m = 1$  this equation was proposed by Lane to study the interior of a star.

We will discuss some new and well-known results for these equations. In the center of our attention will be a new monotonicity formula for the triharmonic case  $m = 3$  for certain combinations of  $p$  and  $n$ . This formula will allow us to bound the Hausdorff-dimension of the singular set of stationary solutions.