

Seminar of the Work Group Nonlinear Partial Differential Equations SS 22

Speaker: Dr. Dongxiao Yu July 26th, 2022, 14:00 - 15:00 Seminar room: 3.061

## Nontrivial global solutions to some quasilinear wave equations in three space dimensions

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## Abstract

In this talk, I will present a method to construct nontrivial global solutions to some quasilinear wave equations in three space dimensions. Starting from a global solution to the geometric reduced system satisfying several pointwise estimates, we find a matching exact global solution to the original quasilinear wave equations. As an application of this method, we will construct a class of nontrivial global solutions to  $\Box u = u_t u_{tt}$  for  $t \geq 0$ . Previously Fritz John proved that any nonzero solution to the same equation with  $C_c^{\infty}$  initial data must blow up in finite time. Our result does not contradict his blowup result because the initial data of the solutions constructed in this talk are not localized.