



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 $\square u = u_t u_{tt}$ for $t \geq 0$. Previously Fritz John proved that any nonzero solution to the same equation with C_c^∞ 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.