In this article we focus on the initial-boundary value problem consisting of a system of nonlinear wave equations of the form

\[ u_{tt} - \Delta u + |u_t|^{m-1}u_t = \frac{\partial F}{\partial u}(u, v), \]

\[ v_{tt} - \Delta v + |v_t|^{r-1}v_t = \frac{\partial F}{\partial v}(u, v), \]

with initial and Dirichlet boundary conditions, where

\[ F(u, v) = \alpha |u + v|^{p+1} + \beta |uv|^{\frac{p+1}{2}} \]

and \( \Omega \subset \mathbb{R}^n \) (\( n = 1, 2, 3 \)) is a bounded domain. Under some conditions on \( m, r, \Omega, \) and \( p, \) we obtain several results on the local existence, global existence, uniqueness, and blow-up of weak solutions. (Received September 28, 2005)