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Abstracts of Short Communications and Posters

Section:

10. Partial Differential Equations

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Asymptotic behaviour of solutions to second-order hyperbolic equations
Let $\Omega \subset \mathbf{R}^n_x$ be a bounded domain. Consider the equation

$$u_{tt} + g(u_t) - \Delta u = f(t,x), \quad x \in \Omega,$$

supplemented with the Dirichlet boundary condition. Here $g(p)$ is a monotone increasing continuous function on $\mathbf{R}$ and $f(t,x)$ is a time-bounded function with range in $L^2(\Omega)$. Sufficient conditions are found for the existence, uniqueness, and asymptotic stability of a time-bounded solution. Under the additional condition that $f(t,x)$ is an almost periodic function in time, the almost periodicity of the constructed solution is established. Similar results are obtained for some other classes of hyperbolic equations.
References: A. R. Shirikyan, Asymptotic behaviour of solutions to second-order hyperbolic equations with non-linear damping term, *Memorie Mat. Appl.* , to appear.
L. R. Volevich and A. R. Shirikyan, Bounded and almost periodic, in time, solutions of nonlinear hyperbolic equations of high order. *Trans. Mosc. Math. Soc.* **58** (1997), 89–135.