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Stability of difference schemes in Cauchy problems with almost periodic solutions. (English. Russian original) Zbl 0551.65063

Differ. Equations 20, 525-530 (1984); translation from Differ. Uravn. 20, No. 4, 689-695 (1984).

It is known that in the approximation of an abstract parabolic equation, an explicit difference scheme is stable when the discrete time and space steps satisfy the conditions $\tau_n \leq ch_n^2$, where c is a constant. We prove that, in the solution of a first-order evolution equation with almost periodic solutions (a hyperbolic equation), the conditions $\tau_n \leq ch_n$ must be satisfied if we are to have stability.

MSC:

65M12	Stability and convergence of numerical methods for initial value and initial-boundary value problems involving PDEs	Cited in **4** Documents
65J10	Numerical solutions to equations with linear operators	
35K55	Nonlinear parabolic equations	
34G10	Linear differential equations in abstract spaces	

Keywords:

stability of difference schemes; Cauchy problems; first-order evolution equation; almost periodic solutions

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