

# ASYMPTOTICALLY ADS SOLITONS AND THEIR STABILITY

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ABSTRACT. We consider the four-dimensional Einstein- $\Lambda$ -Klein-Gordon system with mass  $\mu^2 = \frac{2}{3}\Lambda < 0$ . This system is known to possess a family of regular static solutions (solitons) satisfying Robin boundary conditions at infinity. In the first part of this paper we establish rigorously the existence of the solitons and some of their properties (in particular, the mass curve). In the second part, we study dynamics of perturbations around the solitons and find that they do not grow, indicating that the solitons are stable. Along the way, we discover time-periodic solutions that oscillate between two solitons.

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