Cauchy matrix for linear almost periodic systems and some consequences

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A novel method to construct the fundamental matrix for a linear almost periodic system is proposed, provided that the diagonal terms satisfy an average separation condition and the off-diagonal coefficients are L?- small. The idea is to transform the system in a set of Riccati type equations and use exponential dichotomy and its consequences. It is shown that the method yields easy computation procedures with simple and direct conditions depending on the coefficients. Finally, our result enables us to obtain: (i) explicit almost periodic matrices $Q(t)$, $Q-1(t)$ and $Q?(t)$, which diagonalize the original system and (ii) sufficient conditions for the stability. Two illustrative examples are shown. © 2011 Elsevier Ltd. All rights reserved.