Integrability and asymptotic behaviour of a matrix lattice equation

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In this talk we consider a matrix lattice equation, both in its autonomous and nonautonomous versions, and show integrability in both cases. Moreover, we explore the construction of Miura maps which relate these two lattices, though intermediate integrable lattice equations, to matrix analogues of autonomous and nonautonomous Volterra equations but in two matrix dependent variables which, in general, are subject to consistency conditions. For these last Volterra-type systems we consider certain special classes of matrices and derive coupled systems of integrable equations. We also consider asymptotic reductions to matrix partial differential equations. In addition, in the nonautonomous case, we construct a new nonisospectral matrix Volterra system together with its corresponding Lax pair. It is also interesting that in the nonautonomous case, the relation obtained between certain lattices even in the scalar case seems to be new.