

A new extended matrix KP hierarchy and its solutions

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Abstract:

With the square eigenfunctions symmetry constraint, we introduce a new extended matrix KP hierarchy and its Lax representation from the matrix KP hierarchy by adding a new τ_B flow. The extended KP hierarchy contains two time series t_A and τ_B and eigenfunctions and adjoint eigenfunctions as components. The extended matrix KP hierarchy and its t_A -reduction and τ_B reduction include two types of matrix KP hierarchy with self-consistent sources and two types of (1+1)-dimensional reduced matrix KP hierarchy with self-consistent sources. The generalized dressing approach for solving the extended matrix KP hierarchy is proposed and some solutions are presented.

References:

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2. M. Jackson and D. Johnson, Stud. Appl. Math. 100, 200-300 (2002).