Explicite solutions of some vector potential equilibrium problems and uniformization of algebraic curves

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We discuss several equilibrium problems for the logarithmic potential of vector measure with special matrices of interaction between components of the vector measure. These problems appear in the theory of Hermite-Padé approximants. It is not difficult to see that Cauchy transforms of the components of these equilibrium vector measures are branches of algebraic functions. Much more difficult problem is to find the equation for this algebraic function. For some problem it is possible to do finding uniformization of these algebraic curves.