Section number: 14Name and Affiliation: Igor Anders, Institute for Low temperature Physics and Engineering, Kharkov, Ukraine,anders@ilt.kharkov.uaTitle:

Miura transformation for the KP and mKP equations and solutionof the (2+1) KN equationWe consider two dimensional Miura transformation

$$v(x,y,t) = -u_x(x,y,t) - u^2(x,y,t) - \sigma\partial_x^{-1}u_y(x,y,t) \tag{1}$$

which connects the solutions of the modifiedKadomtsev-Petviashvili equation

$$M(u) = u_t + \frac{1}{4}u_{xxx} - \frac{3}{2}\left(u^2u_x + \sigma u_x\partial_x^{-1}u_y - \frac{1}{2}\sigma^2\partial_x^{-1}u_{yy}\right) = 0. \tag{2}$$

with the solutions of the Kadomtsev-Petviashvili equ ation

$$K(v) = \left(v_t + \frac{1}{4}v_{xxx} + \frac{3}{2}vv_x\right)_x + \sigma^2\frac{3}{4}v_{yy} = 0. \tag{3}$$

We obtain the scheme of integration of (2) by the dressing method, which allows us to construct the solutions v of the KP and u of the system connected by the Miura transformation (1).The KP and mKP equations have not a wide set of explicit solutions. We present some new examples of plane soliton-like solutions of mKP (solitons on the mooving background). It turns out thatthe family of solutions of the mKP equation corresponds to one and the same solution of the KP equation.Moreover, under the construction of the scheme of the integration of the mKP equation, the (2+1)generalization of the Krichever-Novikov equation

$$2\rho_x + \sigma\frac{\alpha_y}{\alpha_x} + \frac{\alpha_{xx}}{\alpha_x} = 0 \tag{4}$$

$$\alpha_t - 2\alpha_{xxx} - 3\sigma\alpha_{xy} + \frac{3!}{2}\sigma^2\frac{\alpha_y^2}{\alpha_x} - \frac{3}{2}\frac{\alpha_{xx}^2}{\alpha_x} - \frac{3}{2}\sigma\rho_y = 0. \tag{5}$$

is arised by the natural way.The formulas for α and ρ based on the solution of the Marchenko integral equation are also obtained.2000 MSC: 35Q51, 35Q53Key words: dressing method, transformation operator, soliton