Travelling wave solutions for the two dimensional Hirota system of equations

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Abstract: In this talk, we investigate the two dimensional Hirota system of equations by next form

$$
\begin{aligned}
&(1) & iq_t + \alpha q_{xy} + i\beta q_{xxy} - vq + i(wq)_x &= 0, \\
&(2) & v_x + 2\alpha\delta(|q|^2)_y - 2i\beta\delta(q^*_{xy}q - q^*q_{xy}) &= 0, \\
&(3) & w_x - 2\beta\delta(|q|^2)_y &= 0,
\end{aligned}
$$

where $q(x, y, t)$ is complex function, $v(x, y, t)$, $w(x, y, t)$ are real functions, α, β, δ are constants.

The equations (1)-(3) were presented in work [1], [2]. We apply the extended tanh method for the two dimensional Hirota system of equations in order to obtain new exact solutions. The extended tanh method constructs traveling wave solutions in terms of a hyperbolic tangent functions [3]. New families of solitary wave solutions and periodic solutions are obtained for the two dimensional Hirota system of equations.

Keywords: Hirota system, extended tanh method, traveling wave solution

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