

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Energy Transfer into Cross-Waves by Wavemakers TATYANA KRASNOPOLSKAYA, Department of Vortex Motion, Institute of Hydromechanics NASU, VIATCHESLAV MELESHKO, Department of Theoretical and Applied Mechanics, Faculty of Mechanics and Mathematics, Kiev National Taras Shevchenko University, VIACHESLAV SPEKTOR, Department of Vortex Motion, Institute of Hydromechanics NASU — In the long channels, the cross-waves derive their energy directly from wavemaker not only from basic flow. In the present talk we show how cross-waves are generated in long rectangular channels by wavemaker even without having to take into account the presence of any basic flow waves. Here we apply Lamè's method of superposition for the first time in such channel geometry. This method allows one to construct a simple mathematical model, which shows how the cross-waves can be generated directly by the wavemaker motion. This mathematical model of the resonant cross-wave excitation is the easiest way to study pattern formation on fluid free surface. Our experimental observations agree with the theoretical results.

Tatyana Krasnopolskaya
Department of Vortex motion, Institute of Hydromechanics NASU

Date submitted: 30 Jul 2010

Electronic form version 1.4