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Turbulent wind waves on a water current

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Abstract. An analytical model of water waves generated by the wind over the water surface is presented. A simple modeling method of wind waves is described based on waves lengths diagram, azimuthal hodograph of waves velocities and others. Properties of the generated waves are described. The wave length and wave velocity are obtained as functions on azimuth of wave propagation and growth rate. Motionless waves dynamically trapped into the general picture of three dimensional waves are described. The gravitation force does not enter the three dimensional of turbulent wind waves. That is why these waves have turbulent and not gravitational nature. The Langmuir stripes are naturally modeled and existence of the rogue waves is theoretically proved.

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