Abstract Submitted for the MAR08 Meeting of The American Physical Society

Intensity correlations in wave transport through complex media GABRIEL CWILICH, Department of Physics - Yeshiva University, LUIS FROUFE-PEREZ, Laboratoire EM2C, Ecole Centrale Paris, ANTONIO GARCIA-MARTIN, Instituto de Microelectronica de Madrid, CSIC, JUAN JOSE SAENZ, Departamento de Fisica de la Materia Condensada, Universidad Autonoma de Madrid — The intensity-intensity correlations that appear when a wave propagates coherently through a random medium will be discussed within the framework of the random matrix theory (RMT) of transport. We will consider the case of transmittedtransmitted, reflected-reflected and transmitted-reflected correlations. In the case of transmission the spatial correlations can be expressed as the sums of three terms with distinctive spatial dependences. This result coincides with the one obtained in the diffusive regime from perturbative calculations, but here its validity is extended from the quasi ballistic to the localized regime. In the RMT framework, approximate solutions of the DMPK equations allow us to study the dependence of the correlations with the length of the system.

> Gabriel Cwilich Department of Physics - Yeshiva University

Date submitted: 27 Nov 2007

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