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Intensity statistics of branched flow JAKOB METZGER, RAGNAR FLEISCHMANN, THEO GEISEL, Max-Planck-Institute for Dynamics and Self-Organization, Goettingen, Germany — Branched flow is a universal phenomenon of particle and wave flows which are subjected to weak, correlated disorder. It has been observed on length scales ranging from a few micrometres, affecting the transport properties of semiconductor devices [1], up to several thousand kilometres, influencing sound propagation through the ocean [2]. It is also responsible for the appearance of large and hazardous freak waves and tsunamis [3]. While the statistics of the number of such branches has recently been calculated [4], the influence on the statistics of the intensity of the waves remains an open question [5]. Here, we show how the classical ray intensity impacts on the wave intensity statistics, and illuminate the role played by the decoherence of the wavefunction.

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