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Some Statistical Issues in Visual Field Analysis

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ABSTRACT

Visual field analysis is an important clinical approach to detecting eye defects, in the case of both retinal and neurologic diseases. A first peculiarity of the tools used to make measurements in visual field analysis is that the company producing these tools does not fully disclose how the measures are taken, and how the statistics it yields are computed. A second peculiarity is that the data of retinal sensitivity to light—the rawest output of the field analyser—has a spacial component. We thus attempt to provide a functional model for this type of data, and with it explore some of the statistical and interpretative issues that are brought about by how the field analyser computes the output statistics, or which are present in the literature. We go into some detail to describe the “experiment” which the machine does when a subject is tested, and we try to give some comments and suggestions.