

# On the Relationship of Boolean Function Spectra and Circuit Output Probabilities

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## Abstract

A Boolean function may be uniquely represented by a complete spectral vector or a truth table. The former generally provides global information regarding functional behavior over all or a subset of inputs while the latter provides local information specifying functional behavior for a specific set of variable valuations. Various forms of output probabilities may be considered as fundamental quantities upon which spectra directly depend. This result demonstrates the existence of an alternative and unifying set of values that may be used to determine function characteristics in either the Boolean or spectral domains.

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