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Logical Modalities in Statistical Models

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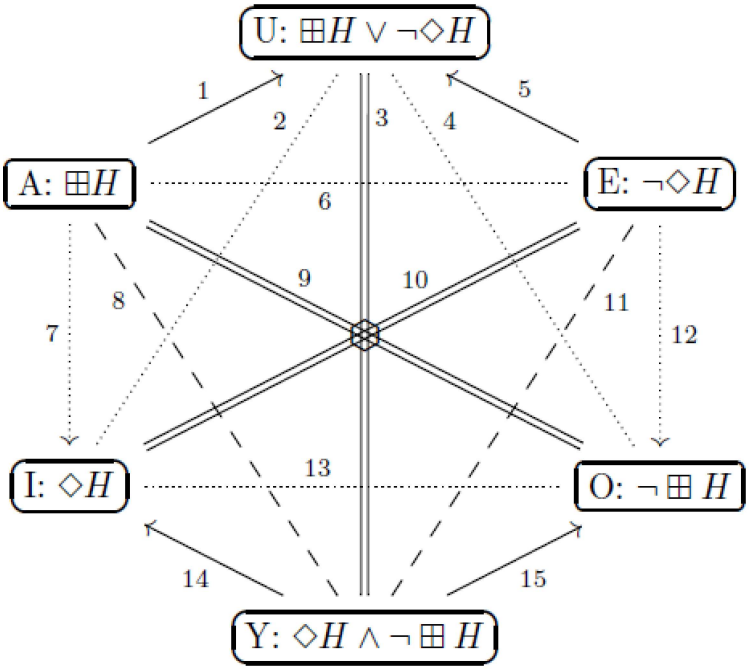

Hexagon of Opposition for Statistical Modalities

In previous work the authors have explored logical conditions for consistent and coherent statistical test of hypothesis, using these conditions to derive the GFBST — Generalized Full Bayesian Significance Test. [1,3,6] explore in detail the mathematical statistics and logical properties of the GFBST. The GFBST generalizes the previously defined non-agnostic version of the test, see [2,4,5]. However, these articles do not provide specific methodologies and concrete examples on how to construct an extended non-sharp version of a sharp hypothesis, a necessary step to apply the GFBST theory in some real statistical modelling situations.

In this paper we explore a method for constructing non-sharp versions of sharp hypotheses, using two simple statistical models as concrete examples, namely, the Hardy-Weinberg equilibrium hypothesis and the constant coefficient of variation hypothesis, as presented in [5]. Such extensions are constructed using techniques of perturbation analysis, based on engineering, instrumentation, observational and another implementation information about the pertinent statistical trial or experimental setting [see 7].

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Probability Valuations[†]

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