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On multidimensional item response theory - a coordinate free approach

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Abstract

A coordinate system free definition of complex structure multidimensional item response theory (MIRT) for dichotomously scored items is presented. The point of view taken emphasizes the possibilities and subtleties of understanding MIRT as a multidimensional extension of the "classical" unidimensional item response theory models. The main theorem of the paper is that every monotonic MIRT model looks the same; they are all trivial extensions of univariate item response theory.

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