Assessing reliability and agreement of repeated measurements using hierarchical models

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We present the use of linear mixed-effects models with nested random effects to assess the repeatability and agreement of two or more measurement devices. The idea is illustrated by means of two sets of data. The first considers eight different protocols for the recording of distortion product otoacoustic emissions in Sprague-Dawley rats. The second data set was obtained from the calibration of two types of extremely low frequency magnetic field dosimeters.