

# A Model with Four Parameters to Quantify Tonal Variation – A Case Study of Chongqing Dialect

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## **Abstract**

Four sets of parameters under two modes are designed to quantify citation form's tonal variation. Chongqing Dialect is selected to test the effectiveness of these parameters. The model is designed with the intention to be applicable to Chinese dialect's citation form in general. By checking the distribution of these parameters, the traditionally neglected value of peripheral data is now open to investigation. It is found that the variation of each tone is far greater than previously conjectured, to the extent that re-evaluation of the description of a tone is worth considering. One of the most surprising findings is the non-necessity of curvature for Tone 3 and Tone 4 in Chongqing Dialect. The author tries to unite the unexpected large variation under the concept "perception space". If we employ "perception space", then geographic variation and age variation do not have to be analogous, and should not be thought to represent different stages in time. In this way, inconsistency within our data, and inconsistency between our research and other studies can be explained. The author claims that when an over-arching "perception space" larger than the observed "production space" exists, and when the observed variation in production does not cross the perception space's boundary, we cannot extrapolate either the history or the future of tone from the variation data by artificially classifying production data according to the geographical origin and the age difference of the speakers.