

1117-57-328

Thomas A. Ivey* (iveyt@cofc.edu). *Remarks on the Geometry of Chords*. Preliminary report.

In a sequence of publications Dmitri Tymoczko and collaborators have developed the notion of chord and voice-leading spaces constructed by applying various musically relevant equivalence relations (generated by group actions) to cubic lattices in n -dimensional pitch spaces. The quotient lattices are naturally embedded in topological spaces which are typically orbifolds, but it is difficult to formulate a mathematically valid notion of geometry for these spaces that is also musically meaningful.

Nonetheless, a mathematical examination of the literature on the geometry of chords (including Tymoczko's 2011 book "The Geometry of Music") leads to several interesting avenues: many continuous chord spaces have non-trivial topology that has musical significance (e.g., homotopy generators in the orbifold lift to modulatory sequences of chords); the orbifold points within these spaces often represent chords that maximize tonal ambiguity; and it may be possible to apply more sophisticated models (e.g., Finsler metrics) to endow these spaces with a path geometry that reflects the dominant features of certain stylistic corpora.

This talk is based in part on a summer research project conducted with College of Charleston undergraduate Omar Valencia. (Received January 17, 2016)