1117-54-441 **Jason Yust*** (jason.yust@gmail.com), 39 Northbourne Rd, Jamaica Plain, MA 02130. *A three-dimensional model of tonality.*

This talk proposes a spatial model of tonality using the discrete Fourier transform on characteristic functions of pitch-class sets. I define a three-dimensional torus using phases of the second, third, and fifth coefficients of the DFT ($Ph_2$, $Ph_3$, and $Ph_5$). $Ph_5$ represents diatonicity, $Ph_3$ represents triadic voice-leading properties, and $Ph_2$ tracks the structural counterpoint of fifths. I show that common tonal sets (including triads, perfect fifths, unisons, and diatonic scales) lie on or close to the "tonal plane" defined by $Ph_2 + Ph_3 - Ph_5 = 0$. The arrangement of tonal regions on this plane closely resembles the empirically derived Krumhansl-Kessler space, and as a distributional model it suggests a key-finding algorithm similar to Krumhansl-Schmuckler's and Temperley's. However, the added dimension motivates refinements to concept of key, where deviations from the tonal plane (indexed by $Ph_2 + Ph_3 - Ph_5$) measure tonal stability. Small deviations may indicate dominant and subdominant functions, while regions further from the plane are tonally ambiguous. The space also has a rich fundamental group, with the different homotopy classes (i.e., cycles in different dimensions) associated with different types of sequential routines in music. (Received January 18, 2016)