1067-05-792 **Jonathan Wild*** (wild@music.mcgill.ca), Schulich School of Music, McGill University, 555 Sherbrooke Ouest, Montreal, Quebec H2L 4H1, Canada. *Massively all-interval voice-leading structures.*

In this talk I present a remarkable voice-leading structure in nineteen-tone equal temperament ("19-tet"–equivalent to a historical meantone tuning where the perfect fifth is tempered by a third of a syntonic comma). At the core of the structure is the (19,9,4) Hadamard-Paley difference set, whose members are the quadratic residues mod 19: {1,4,5,6,7,9,11,16,17}. Each of the nine interval-classes (unordered distances) of 19-tet is found exactly four times among the members of this nine-note collection. The massively all-interval structure of the title is a voice-leading progression through a cycle of nine transpositions of this chord, joined in such a way that each transition between chords involves the nine voices moving by nine different interval-classes, and no single voice repeats any interval-class during the nine-chord cycle. A computer search has provided the solution to this problem; it is unique up to global pitch-class transposition/inversion and retrogression/circular permutation of the chord progression. Unexpected properties, both algebraic and musical, emerge from the various combinations of the nine voice-leading strands thus constructed. (Received September 14, 2010)