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30316. *Mathematical Analysis of A Cappella Flamenco Music.*

In this work we present some mathematical techniques for the analysis of flamenco music. Here we consider the problem of similarity in a specific musical repertoire: a cappella flamenco singing, more specifically in debla martinete styles. We start off by briefly describing what flamenco music is like. Next we detail some characteristics of flamenco singing and a cappella singing styles. In the following section we examine the problem of melodic similarity in flamenco music. Two types of features are considered, low-level features and mid-level features. The latter refers to musical features whereas the former refers to certain properties of the audio signal. Such a characterization has to be mathematically treated so that a similarity measure is properly defined. Next section contains the main contributions of our work: the distance based on those features is described and the combined distance is finally defined. Assessment strategies for the obtained similarity distance are thoroughly discussed, including phylogenetic trees, which are also used to visualize clustering and analyze style discrimination. (Received January 18, 2016)