



Definition: harmonic chromatic

D major = { D, E, F#, G, A, B, C# }

D (harmonic) minor = { D, E, F, G, A, Bb, C# }

D (melodic) minor (ascend) = { D, E, F, G, A, B, C# }

D (melodic) minor (descend) = { D, E, F, G, A, Bb, C }

D harmonic chromatic scale

= all above + flat 2nd + sharp 4th

= { D, Eb, E, F, F#, G, G#, A, B, Bb, C, C# }

EC: Meredith's Algorithm

CHS: Chromatic harmonic scales

- In **C** = { C, Db, D, Eb, E, F, F#, G, Ab, A, **Bb**, B }
- In **Db** = { Db, Ebb, Eb, Fb, F, Gb, G, Ab, **Bb**, B, Cb, C }
- In **D** = { D, Eb, E, F, F#, G, G#, A, **Bb**, B, C, C# }
- In **Eb** = { Eb, Fb, F, Gb, G, Ab, A, **Bb**, Cb, C, Db, D }
- In **Gb** = { Gb, Abb, Ab, Bbb, **Bb**, Cb, C, Db, Eb, E, Fb, F }
- In **G** = { G, Ab, A, **Bb**, B, C, C#, D, Eb, E, F, F# }
- In **Ab** = { Ab, Bbb, **Bb**, Cb, C, Db, D, Eb, Fb, F, Gb, G }
- In **A** = { A, **Bb**, B, C, C#, D, D#, E, F, F#, G, G# }
- In **Bb** = { **Bb**, Cb, C, Db, D, Eb, E, F, Gb, G, Ab, A }

EC: Meredith's Algorithm

Meredith's Algorithm

X(10, Bb) = CHS in which n is **Bb** = {C,Db,D,Eb,Gb,G,Ab,A,Bb}

X(10, A#) = CHS in which n is **A#** = {C#,D#,E,E#,F#,G#,A#,B}

X(10, Bb) maps to the pc {0,1,2,3,6,7,8,9,10}

X(10, A#) maps to the pc {1,3,4,5,6,7,10,11}

Likelihood of n being Bb $\square N(\text{Bb}, 10) = \square_p \square X(10, \text{Bb}) \text{CNT}(p, 10)$

Possible letter names, $\mathcal{L} = \{ A\#, Bb \}$

Letter name = argmax { N(A#,10), N(Bb,10) }

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