



Figure S6. Non-significant phase wandering pattern in left hand movements of ID25 during the music condition “Go Trippy” (130.0 BPM) (Video S5). **(A)** Sound wave of the auditory stimulus (yellow) with the detected beat onsets (red vertical lines). **(B)** Observed (left) and phase-randomized (right) position data $s_{pos}(t)$ along the X coordinate axis within a moving section. **(C)** Instantaneous phase of the musical beat $\phi_{music}(t)$ calculated from the detected beat onsets. **(D)** Instantaneous phase of motion $\phi_{motion}(t)$. **(E)** Relative phase $\phi_{rel}(t)$ between motion and the musical beat. **(F)** Circular histograms of $\phi_{rel}(t)$. **(G)** Monte-Carlo statistics showed that the observed synchronization index (magenta line) was *not* above the 95 % confidence interval of the surrogate synchronization indexes (blue lines) calculated from the 10,000 phase-randomized position data.