Ethan Blackwood, 2018-05-24 Phase Calculator data flow Phase Calculator is a plugin for the OpenEphys GUI. Key: Main thread float double AudioSampleBuffer in complex double past data Filter with 2nd-order Butterworth bandpass filter predicted future data (in-place) synchronous ----> asynchronous access controlled by lock Enqueue and cast to double (past samples shifted back) AR model thread hilbertPastLength historyBuffer ☐ historyBuffer If history full ARMaxEntropy <u> arPar</u>ams arParams historyLength (>= 65536) If history full and AR params Calculate The contents of historyBuffer have been autoregressive are also used to calculate the calculated model parameters arOrder precise phase of received events for arPredict the visualizer. hilbertBuffer **DFT** predictionLength hilbertBuffer hilbertManip Hilbert transform hilbertBuffer Inverse DFT hilbertBuffer Cast and calculate phase angle (and/or magnitude, or imaginary component) For phase output only unwrapBuffer Correct wrapping glitches Correct small downward jumps smoothBuffer at starts of buffers AudioSampleBuffer out