



Supplementary Figure 1. Finding spike beginning (T_{bkg1}) and end (T_{bkg2}).

Dashed lines represent spike baseline and percentages of I_{max} on current traces or zero line of the differential traces. Circles on dl/dt trace indicate interceptions with zero. The scale-bars are 20 pA, 20 pA/ms and 5 ms. Upper sub-panels show amperometric current, lower sub-panels - its time derivative, except **d**. **(a)** Analysis of spikes on traces with stable background current. T_{max} and $T(dI/dt)_{max}$ are times at the maxima of the current and dI/dt , correspondingly. **(b)** Example of fitting the current from 25% of I_{max} on spike rising phase to T_{bkg2} with exponentially modified Gaussian curve. Note that the maximum of the fit curve is lower than the maximum of current; this discrepancy might be bigger for smaller spikes or on recordings with higher noise. **(c and d)** Searching for steady state that precedes a spike or the one on PSF. The same spike at different scales is shown on **c** and **d**. Vertical lines on **d** show trace segments with duration ΔT_{min} (upper) and $2 * \Delta T_{min}$ (lower); horizontal solid lines represent average current within each segment; arrowheads indicate steady states found by the routine. To find the steady state before the spike, ΔT_{min} is set to spike width at $T(dI/dt)_{max}$ (duration between points 1 and 1' on **a**). To find PSF steady state, ΔT_{min} is set to half of the user-defined minimal foot duration. **(e)** The presence of high-frequency noise (arrowhead) affects the accuracy of T_{bkg2} determination, leading to underestimation of amperometric charge and a misrepresentation of falling phase fit constants. **(f)** Analysis of spikes with uneven baseline. Horizontal dotted line represents background current preceding the first spike. See **Supplementary Methods** online for more details.