



Figure 4 - figure supplement 1 | Simple spike firing is predominantly associated with protraction

A. The average whisker response to air-puff stimulation (for reference, copied from Figure 4D). **B.** Overlaid plots of the correlation between whisker angle and instantaneous simple spike frequency based on a trial-by-trial analysis of all 56 PCs measured in this way (see Figure 6). The correlation values are based upon the zero-lag correlation (thus along the “45° line” in Figure 4C,D). **C.** Stacked line plot of the 25 PCs with a significant correlation between whisker angle and simple spike firing. The cells are ordered based upon their correlation value and scaled so that the brightest line corresponds to the average. **D.** As in **C**, but now of the 31 PCs that did not show a significant correlation between their simple spike firing and the whisker position. Although the correlation is not significant

when regarded per cell, overall there is a negative correlation between simple spike firing and whisker position. The darkest line corresponds to the average. **E.** Correlation matrix showing the correlation between whisker protraction (on the y axis) and instantaneous simple spike frequency (on the x-axis) of the 31 PCs that did not have a significant correlation between these two parameters. The heatmap represent the average R value for each bin ($n = 31$ PCs). The lookup table shows the color coding for the R values. **F.** Despite the lack of correlation at the single-cell level, at the population level these PCs correlated weakly but significantly in a negative manner ($R = -0.067$; $p < 0.001$; Pearson correlation), implying that they correlated more with retraction than with protraction. The black line indicates the linear regression line and the blue lines the 95% confidence interval. *** $p < 0.001$