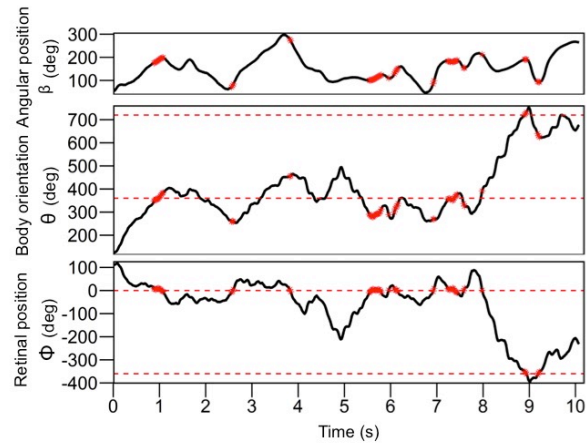
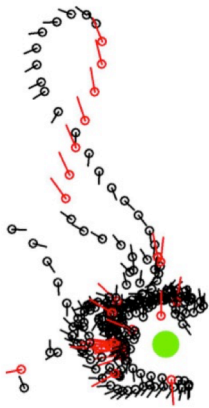


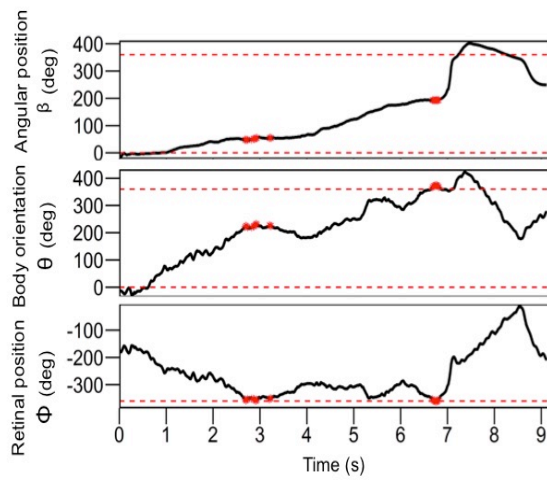
**Figure S1. Further example trajectories of a bumblebee male (A) and worker (B) leaving the flower.**

In some learning flights bees turn for long periods in the same direction, rotating clock- or counter-clockwise through several complete revolutions. In other flights bees alternate their direction of rotation. Each dot depicts the position of the bee every 40 ms. The line shows the bee's body orientation. Red circles and lines indicate when the bee faces the flower. Green circle shows the position of the flower. Time plots show the bee's cumulative angular position ( $\beta$ ) (Zeil, 1993a), its body orientation ( $\theta$ ) relative to the line between the flower and central landmark (F-C), and the position of the flower relative to the bee's longitudinal axis ( $\phi$ , 'Retinal' position for short). Arrows (inset) point in a positive direction. Moments in which the bee faced the flower ( $\pm 10^\circ$ ) are shown in red.

A



B



**Figure S2. Further similarities in the learning flights of a bumblebee male (A) and worker (B) leaving the flower.** For details see Figure S1.