

**Movie 1. Visualization of the experimental setup**. A female hummingbird, with the five markers visible, hovers within the cylinder near the centrally suspended feeder. The high speed camera positioning and the projected virtual surround are emphasized at the start of the video. The bird can be seen rotating both head and body, and flying with the virtually rotating surround.



**Movie 2. A hummingbird tracking and following the virtual surround.** The bars projected on the cylinder wall move clockwise at  $134 \,^{\circ} \, \text{s}^{-1}$ . The high-speed video, recorded as an additional trial, has been down-sampled to play at approximately one-third of the real speed. Note at the end that the bird ceases to rotate its head and body, and ceases to fly concentrically when the projected rotation is arrested.