What is the effect of a magnetic pulse on navigation of desert ants (*Cataglyphis nodus*)?

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Many animal species use the Earth's magnetic field for spatial orientation, but the mechanisms underlying magnetoreception are not completely understood. To study how animals sense the magnetic field, we can manipulate the magnetic sense of desert ants *Cataglyphis nodus*, that are exceptional experimental models for insect navigation. They use their magnetic sense to align their gaze directions during learning walks. *C. nodus'* navigational system is not completely equipped from the start. At the beginning of their foraging lives, *C. nodus* ants use up to three days to perform learning walks, explorative trips around the nest entrance. During learning walks, the ants learn information about the nest surroundings and perform rotational elements (voltes and pirouettes). A pirouette is a turnabout the ant's body axis, throughout which an ant stops numerous times. During the longest stopping phase, the ant gazes at the nest entrance, an invisible hole in the ground. The geomagnetic field is a necessary and sufficient cue to align the gaze directions during learning walks. Recent work suggests that *Cataglyphis'* magnetic compass is polarity-sensitive indicating a particle-based mechanism for magnetoreception. The ferromagnetic hypothesis states that in animals detecting the geomagnetic field with a particle-based mechanism the magnetic sense should be disturbed by a magnetic pulse, resulting in a change of the behavioral response. In this study, we exposed naïve ants to a magnetic pulse. Will the ants' gazes still be directed at the nest entrance after that the ants have been exposed to a magnetic pulse? What will happen to the pulsed ants when they become foragers?

This study was funded by the German Research Foundation (DFG), with the project number 422729997 awarded to P.N.F. and project number 405620408 awarded to W.R. and by the German Scholar Organization, project GSO/KT 16, to P.N.F. P.N.F. and C. T. acknowledge support by SFB1372 ''Magnetoreception and Navigation in Vertebrates'' (project number: 395940726), funded by the DFG and by the program ''ExzellenzStärken'' of the Ministry of Science and Culture of Lower Saxony to support the Cluster of Excellence application ''NaviSense.''