1114-92-262 **Hugh T Blair*** (blairlab@gmail.com), UCLA Dept. of Psychology, 1285 Franz Hall, 502 Portola Plaza, Los Angeles, CA 90095. *Rate and phase codes for space in the mammalian brain.*

There is one thing no navigator ever wants to be, and that is lost. To prevent this catastrophe from occurring, autonomously navigating organisms possess specialized brain systems for mapping and self-localization. Self-localization is the problem of sensing one's own position in space, which can be reduced to a process known as Kalman filtering, whereby the navigator simultaneously tracks its own position on two different maps—an allothetic map and an ideothetic map—that provide complementary information to the navigator about its own location. The challenge for the navigator is to maintain two different estimates of its own position at the same time, one on each map, resolving any conflicts that arise between them so that both estimates remain as accurate and consistent with one another as possible. Based upon theory and evidence, I will argue that the mammalian nervous system has evolved two distinct neural codes—a firing rate code and a spike phase code—for performing allothetic versus ideothetic mapping, respectively. Understanding how these two codes are generated, and how they interact with one another, can inform our understanding of neural mechanisms not only for navigation, but for perception, memory, and decision-making as well. (Received August 30, 2015)