

1163-55-1019

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Unstable parametrized homotopy theory for evasion detection and motion planning.

We will be discussing the use of techniques from unstable homotopy theory, in the context of parametrized homotopy theory, i.e. homotopy theory of spaces X equipped with a reference map $f : X \rightarrow B$ to a fixed base space B , to study time varying problems in the theory of sensor networks and motion planning. In this case the space B will be the real line or an interval within it. It is key that the map f is *not* assumed to be a vibration. It will be interesting to determine when the map f does not admit a section, as well as to understand the space of sections. The techniques involve interesting extensions of unstable homotopy theory to these settings. This is joint work with Ben Filippenko and Wyatt Mackey. (Received September 14, 2020)