1096-05-1319 **Thomas W. Tucker*** (ttucker@colgate.edu), PO Box 163, Sagamore Beach, MA 02562. *The infinite motion conjecture.* Preliminary report.

A graph G has distinguishing number 2, written $D(G) = 2$, if its vertices can be 2-colored (not necessarily properly) so that the only automorphism preserving the colors is the identity. For finite G, it is known that when the elements of $Aut(G)$ move enough vertices compared to the size of $Aut(G)$, then $D(G) = 2$. The Infinite Motion Conjecture (IMC) for a locally finite, connected graph G is that "enough" is infinitely many. It is true for many cases: for example, when $Aut(G)$ is primitive or countable, when G is a tree, or when G has sub-exponential growth. The conjecture appears to be connected more to the logic and topology of infinite permutation groups than graph theory: a counterexample to the same conjecture for directed, non-locally finite graphs uses a version of Cantor's back-and-forth argument for countable dense linear orders without endpoints. This talk will survey what is known about the IMC and its variations. (Received September 17, 2013)