

1143-70-569

Scott David Kelly* (scott@kellyfish.net). *Dynamics of mechanically coupled nonholonomic systems.*

It was observed by Huygens that pendulum clocks mounted to a common mantel will synchronize as a result of mechanical coupling. This talk will explore the influence of analogous coupling on the dynamics of wheeled vehicles rolling atop a common platform. The Chaplygin sleigh surmounted by an actuated rotor has been shown previously to exhibit interesting properties as a nonlinear control system and as a simplified model for a rotor-driven aquatic vehicle. It will be shown that a passive version of such a device, involving a spring-loaded rotor, can be induced to reorient and follow an active version of the device when the two are coupled through a common support, recalling the entrainment of passive bodies by active bodies that's commonly observed, but attributed to more complicated coupling, in fluids. (Received August 21, 2018)