

## Nearly Collisionless Motion for an Inertia-Coupled Rimless Wheel

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brief description: One fundamental difference between wheeled and legged locomotion is the need for continuous versus intermittent support. Thus, any legged robot must have feet which make and break contact with the supporting floor. The energy dissipated in these feet to ground collisions can be reduced significantly. One way to reduce this energy loss is to elastically couple low-mass feet to the ends of each leg. In this work, we demonstrate another approach to reduce energy loss which does not require nearly massless feet. We show results from an experimental prototype which would normally have significant foot/ground impacts. However, we have modified the system to include a spring-coupled inertia. This modified system can achieve a nearly collisionless gait when moving down a shallow incline.