

CLAIMS:

~~1.~~ 1. _____ A ride vehicle system, comprising:
a ride vehicle comprising:
a ride vehicle base configured to interface with a ride track, wherein the ride vehicle base is configured to move along the ride track;
a movable arm comprising a base end and a free end, the movable arm configured to move along one or more motion-controlled axes, wherein the movable arm is mounted to the ride vehicle base at the base end;
a ride seat coupled to the free end of the movable arm; and
a coupling device configured to reversibly couple a first portion of the movable arm to the ride vehicle base, the ride seat to a second portion of the movable arm, the ride seat to the ride vehicle base, or a combination thereof; and

a ride vehicle controller, wherein the ride vehicle controller is configured to:
receive a ride condition signal, wherein the received ride condition signal is configured to indicate that the ride vehicle is approaching a portion of the ride track associated with a ride condition, and wherein the ride condition is configured to cause the ride vehicle to experience forces above a predetermined threshold; and activate the coupling device to couple, during the ride condition, the first portion of the movable arm to the ride vehicle base, the ride seat to the second portion of the movable arm, the ride seat to the ride vehicle base, or a combination thereof based on the received ride condition signal.

~~2.~~ 2. _____ The ride vehicle system of claim 1, wherein the coupling device is configured to at least mechanically or structurally couple a first portion of the movable arm to the ride vehicle base, the ride seat to the second portion of the movable arm, the ride seat to the ride vehicle base, or a combination thereof.

~~3.~~ 3. _____ The ride vehicle system of claim 1, wherein the first portion of the movable arm comprises the free end of the movable arm, and wherein the coupling device is configured to couple the free end of the movable arm to the ride vehicle base.

4. — 4. The ride vehicle system of claim 1, ~~comprising a ride vehicle controller, wherein the ride vehicle controller is configured to receive a ride condition signal, and~~ wherein the ride vehicle controller is configured to output a movable arm position signal based at least in part on the received ride condition signal; and wherein the movable arm

is configured to move with respect to the ride vehicle base in response to receiving the movable arm position signal.

5. 5. The ride vehicle system of claim 1, wherein the coupling device comprises a hydraulic actuator, pneumatic actuator, electric actuator, mechanical actuator, or some combination thereof configured to cause coupling and uncoupling of the coupling device and wherein the coupling device is responsive to a coupling signal and an uncoupling signal to cause the coupling and uncoupling, respectively.

~~6. The ride vehicle system of claim 1, wherein the coupling device is configured to couple the first portion of the movable arm to the second portion of the movable arm.~~

7. 6. The ride vehicle system of claim 1, wherein the ride vehicle base comprises a recess configured to seat the first portion of the movable arm, the second portion of the movable arm, the ride seat, or some combination thereof.

8. 7. The ride vehicle system of claim 7, wherein the coupling device is disposed within the recess and configured couple the recess to the first portion of the movable arm, the second portion of the movable arm, the ride seat, or some combination thereof.

9. 8. The ride vehicle system of claim 1, wherein the movable arm is configured to move the free end of the movable arm with at least six degrees of freedom.

10. 9. The ride vehicle system of claim 1, wherein the movable arm comprises a plurality of arm segments moveably coupled to each other via at least one rotational joint.

~~11.~~ 10. The ride vehicle system of claim ~~109~~, wherein the movable arm comprises a locking mechanism, wherein the locking mechanism is configured to block rotation of the at least one rotational joint to temporarily form a rigid joint.

~~12. The ride vehicle system of claim 1, comprising a ride vehicle controller, wherein the ride vehicle controller is configured to receive a ride condition signal, and wherein the received ride condition signal is configured to indicate that the ride vehicle is approaching a portion of the ride track associated with a ride condition, wherein the ride condition is configured to cause the ride vehicle to experience forces above a predetermined threshold, and wherein the coupling is based on the received ride condition signal.~~

~~13. The ride vehicle system of claim 12~~11. The ride vehicle system of claim 1, wherein the ride condition comprises a shape or angle of the ride track, a speed of the ride vehicle above a threshold, or some combination thereof.

~~14.~~ 12. The ride vehicle system of claim ~~12~~1, wherein the ride vehicle controller is configured to determine a position for the movable arm to generate a movable arm position signal, based at least in part on the received ride condition signal, to reduce forces on at least one rotational joint of the movable arm.

~~15.~~ 13. The ride vehicle system of claim ~~12~~1, wherein the ride vehicle controller is configured to determine a position for the movable arm to generate a movable arm position signal, based at least in part on the received ride condition signal, to reduce forces on the movable arm, the ride vehicle base, or some combination thereof.

~~16.~~ 14. The ride vehicle system of claim ~~12~~1, wherein the ride vehicle controller causes movement of the movable arm such that a center of mass of the movable arm moves towards a center of mass of the ride vehicle base.

~~17.~~ 15. The ride vehicle system of claim ~~12~~1, further comprising at least one position indicator configured to output the ride condition signal, wherein the at least one position indicator is disposed along the ride track.

~~18.~~ 16. A ride vehicle, comprising:

- a ride vehicle base configured to interface with a ride track, wherein the ride vehicle base is configured to move along the ride track;
- a ride vehicle controller, wherein the ride vehicle controller is configured to:
 - receive a locking signal upon the ride vehicle approaching a portion of the ride track associated with a ride condition, and wherein the ride condition is configured to cause the ride vehicle to experience forces above a predetermined threshold;
- a movable arm comprising a base end and a free end, the movable arm configured to move along one or more motion-controlled axes, wherein the movable arm is mounted to the ride vehicle base at the base end, and wherein the movable arm is configured to move with respect to the ride vehicle base in response to a movement signal from the ride vehicle controller;
- a ride seat attached to the free end of the movable arm; and
- a locking device configured to actuate, in response to the locking signal, to a locked position to lock movement of the ~~moveable~~movable arm along at least one motion-controlled axis to restrain the free end of the movable arm.

~~19. — The ride vehicle of claim 18, further comprising a ride vehicle controller, wherein the locking device is configured to actuate to the locked position to lock movement of the moveable arm along the at least one motion-controlled axis in response to a locking signal from the ride vehicle controller.~~

~~20. The ride vehicle of claim 19, wherein the~~17. The ride vehicle of claim 16, wherein the ride vehicle controller is configured to determine a location of the ride vehicle along the ride track based at least in part on ~~an~~instructions executable by a processor stored

in a memory device and output the locking signal based at least in part on the determined location of the ride vehicle along the ride track.

~~24.~~ 18. The ride vehicle of claim ~~19~~16, wherein the ride vehicle controller is configured to determine a location of the ride vehicle based at least in part on a timing system, wherein the controller is configured to output the locking signal at a predetermined time during a ride sequence.

~~22.~~ 19. The ride vehicle of claim ~~19~~16, wherein the locking device is configured actuate to an unlocked position to unlock movement of the ~~moveable~~movable arm along the at least one motion-controlled axis in response to an unlocking signal from the ride vehicle controller.

~~23.~~ 20. The ride vehicle of claim ~~19~~16, wherein the ride vehicle controller is configured to receive a ride condition signal from a ride controller and output the locking signal in response to receiving the ride condition signal.

~~24.~~ 21. A method, comprising:
moving a movable arm of a ride vehicle, relative to a ride vehicle base, to a first configuration, wherein the movable arm comprises:

a free end; and

a base end that is mounted to the ride vehicle base, wherein the ride vehicle base is configured to interface with a ride track;

moving the movable arm from the first configuration to a second configuration when the ride vehicle is at or near a portion of a ride track configured to cause the ride vehicle to experience forces above a predetermined threshold ~~when the movable arm is in the first configuration~~, wherein at least a portion of the movable arm is closer to the ride vehicle base in the second configuration than in the first configuration; and

~~25. The method of claim 24, further comprising~~ actuating a coupling device or a locking mechanism of the movable arm when the movable arm is positioned in the second configuration to lock or stiffen at least a portion of the movable arm.