

CLAIMS

What is claimed is:

1. A suspended aerial vehicle system, comprising:
 - a mothership,
 - an aerial vehicle physically connected to the mothership,
 - a controller configured to coordinate the thrust characteristics of the mothership and thrust characteristics of the aerial vehicle.
2. The suspended aerial vehicle system of claim 1, wherein the mothership is capable of flight.
3. The suspended aerial vehicle system of claim 2, wherein the mothership has the lifting surfaces of a fixed wing aircraft and thrusters characteristic of a rotorcraft.
4. The suspended aerial vehicle system of claim 1, wherein the aerial vehicle is physically connected to the mothership by a supporting line.
5. The suspended aerial vehicle system of claim 4, wherein the mothership supports at least a portion of the weight of the aerial vehicle through the supporting line.
6. The suspended aerial vehicle system of claim 4, wherein the supporting line is part of a winch system that can actuate to adjust the length of the supporting line.
7. The suspended aerial vehicle system of claim 6, wherein the controller is further configured to coordinate the actuation of the winch system.

8. The suspended aerial vehicle system of claim 7, wherein coordinating the mothership, aerial vehicle, and winch system comprises varying characteristics of the thrust produced by the thrusters onboard the aerial vehicle, varying the length of the supporting line, and managing the flight pattern of the mothership.
9. The suspended aerial vehicle system of claim 1, further comprising a dock located on the mothership that connects between the mothership and the aerial vehicle.
10. The suspended aerial vehicle system of claim 1, further comprising a second aerial vehicle physically connected to the mothership.
11. A method for transporting a payload, comprising
 - sending a mothership with an aerial vehicle in a dock located on the mothership to an approach position,
 - deploying the aerial vehicle, and
 - disengaging a payload from the aerial vehicle at a drop off point, or picking up a payload if the aerial vehicle is at a pick up point.
12. The method for transporting a payload of claim 11, further comprising recalling the aerial vehicle to the mothership by varying the length of the supporting line in coordination with varying a thrust engine located on the aerial vehicle until the aerial vehicle is positioned in the dock.
13. The method for transporting a payload of claim 11, wherein the aerial vehicle is connected to the mothership by a supporting line with a length that is adjusted by a winch system.
14. The method for transporting a payload of claim 11, wherein deploying the aerial vehicle comprises releasing the aerial vehicle from the dock

and varying the length of the supporting line in coordination with varying a thrust engine located on the aerial vehicle until the aerial vehicle is positioned at the drop off or pick up point.

15. A system for controlling a suspended aerial vehicle system, comprising
a controller configured to
send a mothership with an aerial vehicle in a dock
located on the mothership to an approach position,
deploy the aerial vehicle, and
disengage a payload from the aerial vehicle at a drop
off point, or pick up a payload if the aerial vehicle is at a pick
up point.
16. The system for controlling a suspended aerial vehicle system of claim 15,
wherein the further is further configured to recall the aerial vehicle to
the mothership.
17. The system for controlling a suspended aerial vehicle system of claim 15,
wherein the aerial vehicle is connected to the mothership by a
supporting line with a length that is adjusted by a winch system.
18. The system for controlling a suspended aerial vehicle system of claim 15,
wherein deploying the aerial vehicle comprises releasing the aerial
vehicle from the dock and varying the length of the supporting line in
coordination with varying a thrust engine located on the aerial vehicle
until the aerial vehicle is positioned at the drop off or pick up point.
19. A suspended aerial vehicle system, comprising
an aerial vehicle with a thruster configured to produce
directionally-focused propulsion, and

a supporting line that attaches to a load-bearing point on the aerial vehicle on a first end of the supporting line and is arranged to be capable of supporting at least some of the weight of the aerial vehicle.

20. The suspended aerial vehicle system of claim 19, wherein the supporting line is attached to an anchor point on a second end of the supporting line.
21. The suspended aerial vehicle system of claim 19, further comprising a mechanical device that is connected to the supporting line and that allows the length or tension of the supporting line to vary.
22. The suspended aerial vehicle system of claim 21, wherein the mechanical device is a winch system.
23. The suspended aerial vehicle system of claim 22, wherein the winch system includes a winch that is located near an anchor point.
24. The suspended aerial vehicle system of claim 21, further comprising a controller that directs manipulation of the supporting line by the mechanical device and manipulation of the thruster propulsion in order to position the aerial vehicle at a desired location.
25. The suspended aerial vehicle system of claim 24, wherein manipulation of the supporting line and manipulation of the thruster propulsion is performed in a coordinated manner.
26. The suspended aerial vehicle system of claim 19, wherein the aerial vehicle is an unmanned aerial vehicle.
27. The suspended aerial vehicle system of claim 19, further comprising a second supporting line that attaches to a load-bearing point on the aerial

vehicle on a first end of the second supporting line and is arranged to be capable of supporting at least some of the weight of the aerial vehicle.

28. A system for controlling a suspended aerial vehicle system, comprising:
- a controller configured to
 - receive information regarding a desired location of an aerial vehicle,
 - determine a flight path for the aerial vehicle, comprising
 - determining adjustments that need to be made to the length of a support line attached to the aerial vehicle, and
 - determining adjustments that need to be made to a thruster on the aerial vehicle, and
 - coordinate manipulation of the supporting line by a mechanical device and manipulation of the thruster in order to position the aerial vehicle to the desired location.
29. The system for controlling a suspended aerial vehicle system of claim 28, wherein the flight path may be determined on a continuous basis.
30. The system for controlling a suspended aerial vehicle system of claim 29, wherein the flight path is comprised of a series of incremental locations along a route between a current location of the aerial vehicle and the desired location, wherein the adjustments that need to be made to the length of a support line attached to the aerial vehicle and the adjustments that need to be made to a thruster on the aerial vehicle are the adjustments needed to move the aerial vehicle from a first incremental location to a second incremental location.

31. The system for controlling a suspended aerial vehicle system of claim 28, wherein determining the flight path further comprises regularly using feedback to determine the adjustments that need to be made to the length of a support line attached to the aerial vehicle and the adjustments that need to be made to a thruster on the aerial vehicle.
32. The system for controlling a suspended aerial vehicle system of claim 28, wherein manipulation of the supporting line comprises directing a mechanical device to alter the length or tension of the supporting line.
33. A means for controlling a suspended aerial vehicle, comprising
 - determining a flight path for an aerial vehicle, comprising
 - determining adjustments that need to be made to the length of a support line attached to the aerial vehicle
 - determining adjustments that need to be made to a thruster on the aerial vehicle
 - coordinating manipulation of the supporting line by a mechanical device and manipulation of the thruster in order to position the aerial vehicle at a desired location.
34. The means for controlling a suspended aerial vehicle of claim 33, wherein the flight path may be determined on a continuous basis.
35. The means for controlling a suspended aerial vehicle of claim 34, wherein the flight path is comprised of a series of incremental locations along a route between a current location of the aerial vehicle and the desired location, wherein the adjustments that need to be made to the length of a support line attached to the aerial vehicle and the adjustments that need to be made to a thruster on the aerial vehicle are the adjustments needed to move the aerial vehicle from a first incremental location to a second incremental location.

36. The means for controlling a suspended aerial vehicle of claim 33, wherein determining the flight path further comprises regularly using feedback to determine the adjustments that need to be made to the length of a support line attached to the aerial vehicle and the adjustments that need to be made to a thruster on the aerial vehicle.
37. The means for controlling a suspended aerial vehicle of claim 33, wherein manipulation of the supporting line comprises directing a mechanical device to alter the length or tension of the supporting line.