## AMENDMENTS TO THE CLAIMS

1. (Currently Amended): A system comprising:

a plurality of discrete antenna elements ~~structures each having a planar surface, said plurality of antenna element structures~~ connected together by a plurality of connectors to form a structural array ~~with~~ having a ~~planar array~~ fully deployed configuration in which the ~~planar surface of said~~ plurality of discrete antenna elements ~~structures~~ are ~~substantially~~ coplanar with one another; ~~and~~

a processing device that generates ~~generating~~ a beam having a beam phase; ~~at said plurality of antenna element structures,~~

one or more sensors that detect ~~determining~~ structural displacement of ~~said~~ the plurality of discrete antenna elements ~~structures~~ from the ~~planar array~~ fully deployed configuration[[,]];

a position correction device that applies a mechanical force to move the plurality of discrete antenna elements toward the fully deployed configuration;

the one or more sensors detecting a residual structural displacement of the plurality of discrete antenna elements from the fully deployed configuration; and

the processing device determining a phase correction to correct for the residual structural displacement, ~~and adjusting~~ and applying the phase correction to the beam ~~phase based on the correction~~.

2. (Currently Amended): The system of claim 1, ~~further comprising~~ wherein:

the one or more sensors comprise a position sensor mounted to one or more of ~~said~~ the plurality of discrete antenna elements ~~structures~~, ~~said~~ the position sensor sensing a position of ~~said~~ the one or more ~~of said plurality of~~ discrete antenna elements; and ~~structures, said~~

the processing device ~~determining~~ determines the structural displacement and the residual structural displacement of ~~said~~ the plurality of discrete antenna elements ~~structures~~ based on the sensed position.

3. (Currently Amended): The system of claim 1, ~~further comprising~~ wherein:

the one or more sensors comprise an acceleration sensor mounted to one or more of ~~said~~ the plurality of discrete antenna element~~s structures~~, ~~said~~ the acceleration sensor sensing an acceleration of ~~said~~ the one or more ~~of said plurality of~~ discrete antenna elements; and ~~structures, said~~

the processing device ~~determining~~ determines the structural displacement and the residual structural displacement of ~~said~~ the plurality of discrete antenna element~~s structures~~ based on the sensed acceleration.

4. (Currently Amended): The system of claim 1, ~~further comprising~~ wherein:

the one or more sensors comprise:

a position sensor mounted to a first one or more of ~~said~~ the plurality of discrete antenna element~~s structures and sensing~~ that sense a position of ~~said~~ the first one or more of ~~said~~ the plurality of discrete antenna elements; and ~~structures,~~

an acceleration sensor mounted to a second one or more of ~~said~~ the plurality of antenna element~~s structures and sensing~~ that sense an acceleration of ~~said~~ the second one or more of ~~said~~ the plurality of discrete antenna elements; and ~~structures, said~~

the processing device ~~determining~~ determines the structural displacement and the residual structural displacement of ~~said~~ the plurality of discrete antenna element~~s structures~~ based on the sensed position and the sensed acceleration.

5. (Currently Amended): The system of claim 3, ~~said~~ the processing device determining position based on the sensed acceleration.

6. (Currently Amended): The system of claim 3, ~~said~~ the acceleration sensor comprising an accelerometer.

7. (Currently Amended): The system of ~~claim 2~~claim 3, each of ~~said~~ the plurality of discrete antenna element~~s structures~~ comprising a flat tile with a first side forming the planar surface[[,]] and a second side opposite the first side, each of the plurality of discrete antenna

elements further comprising a communication device mounted at the fist side and a solar cell mounted at the second side.

8. (Currently Amended): The system of claim 7, wherein ~~said~~ the position sensor ~~is mounted to the first side~~ and ~~said~~ the acceleration sensor [[is]] are mounted to the first side ~~as close as possible to said position sensor~~.

9. (Currently Amended): The system of claim 1, wherein the fully deployed configuration of the structural array has a planar surface, the ~~said~~ structural displacement comprising a deformity in ~~deformities of the planar surface and/or~~ the planar ~~array~~ surface of the structural array.

10. (Currently Amended): The system of claim 1, wherein the position correction device and the ~~said~~ processing device ~~corrects for deformities of~~ correct for the deformity in the planar surface ~~and/or the planar array surface~~ in real time by applying the mechanical force and ~~dynamically adjusting the beam~~applying the phase correction.

11. (Currently Amended): The system of claim 1, wherein ~~said~~ each of the plurality of discrete antenna elements ~~structures each~~ comprise an antenna assembly.

12. (Currently Amended): The system of claim 1, wherein ~~said~~ each of the plurality of ~~structures each~~ discrete antenna elements comprise a flat tile that is square or rectangular.

13. (Currently Amended): The system of claim 1, wherein the one or more sensors comprise ~~further comprising~~ one or more Global Positioning System (GPS) sensors and one or more inertial measurement units (IMUs), ~~sensors at said plurality of antenna element structures or structural array, said~~ the processing device ~~monitoring~~ determining the structural displacement~~, where IMU position and velocity biases are refined based on the fused~~ by fusing GPS and IMU sensor values.

14. (Currently Amended): The system of claim 1, wherein ~~said~~ each of the plurality of discrete antenna elements ~~structures~~ comprises an antenna assembly and ~~said~~ the structural array comprises an antenna array.

15. (Currently Amended): The system of claim 1, ~~said~~ the plurality of discrete antenna elements ~~structures communicating~~ communicate with a processing device on Earth.

16. (Currently Amended): The system of claim 1, ~~further~~ the position correction device comprising a drive device, ~~said~~ the processing device operating the drive device to move one or more of ~~said~~ the plurality of discrete antenna elements toward the fully deployed configuration ~~structures~~ to correct for the structural displacement of ~~said~~ the plurality of discrete antenna elements ~~structures~~from the fully deployed configuration.

17. (Currently Amended): The system of claim 16, ~~said~~ the drive device comprising a torque rod applying a torque to ~~said~~ the one or more of ~~said~~ the plurality of discrete antenna elements ~~structures~~.

18. (Currently Amended): The system of claim 1, ~~further comprising a connector connecting each of said plurality of antenna element structures to at least one neighboring one of said plurality of antenna element structures, wherein~~ wherein the structural displacement of the plurality of discrete antenna elements comprises bending or flexing of ~~said~~ one or more of the connectors ~~results in the structural displacement of said plurality of antenna element structures from the planar array configuation~~.

19. (Currently Amended): A method for communicating, comprising:

transmitting signals to the antenna elements ~~structure or array~~ of claim 1.

20. (Currently Amended): A method for communicating, comprising:

receiving signals from the antenna elements ~~structure or array~~ of claim 1.

21. (Currently Amended): A method for communicating, comprising:

forming, with a plurality of discrete antenna elements connected together by a plurality of connectors, a ~~large~~ structural array having a fully deployed configuration in which the plurality of discrete antenna elements are coplanar with one another;

generating, at a processing device via the plurality of discrete antenna elements, a beam having a beam phase;

detecting, via ~~with~~ one or more sensors, structural displacement of the plurality of discrete antenna elements from the fully deployed configuration;

applying, by a position correction device, a mechanical force to move ~~said~~ the plurality of discrete antenna elements toward the fully deployed configuration; ~~and~~

detecting, via the one or more sensors, a residual structural displacement of the plurality of discrete antenna elements from the fully deployed configuration;

determining, at the processing device, a phase correction ~~based on~~to correct for the residual structural displacement; and

applying [[a]] the phase correction to the beam.