CLAIMS:

1. An apparatus for a projectile, the projectile configured to be launched from a weapons barrel, wherein in operation of the apparatus in association with the projectile under predetermined operating conditions the projectile has a center of pressure, said predetermined operating conditions including an operating airspeed for the projectile greater than a threshold airspeed, the apparatus defining a reference axis and comprising:

- a body inflatable from a deflated configuration having a first volume to an inflated configuration having a second volume, said second volume being greater than said first volume;
- an inflation system for selectively inflating said body from said deflated configuration to said inflated configuration;
- external walls deployable from an undeployed configuration to a deployed configuration responsive to said body being inflated from said deflated configuration to said inflated configuration;

wherein in said undeployed configuration and at said operating airspeed, said center of pressure is located at a first position with respect to the projectile along said reference axis;

and

wherein in said deployed configuration said external walls provide a deployed external surface geometry exposed to an airflow corresponding to said operating airspeed, such that said center of pressure is located at a second position with respect to the projectile along said reference axis, said second position being different from said first position.

2. The apparatus according to claim 1, wherein in said deployed configuration said deployed external surface geometry is outwardly projecting with respect to said reference axis as compared with a nominal external surface geometry of said external walls provided in said undeployed configuration.

3. The apparatus according to any one of claims 1 or 2, wherein in said deployed configuration said external walls provide a deployed external surface geometry that is exposed to an airflow in operation of the apparatus and that has a first forward facing

area, and wherein in said undeployed configuration said external walls provide an undeployed external surface geometry that is exposed to said airflow in operation of the apparatus and that has a second forward facing area, said first forward facing area being greater than said second forward facing area..

4. The apparatus according to any one of claims 1 to 3, wherein said threshold airspeed is 0.6 Mach Number or greater than 0.6 Mach Number.

5. The apparatus according to any one of claims 1 to 4, including at least one of the following:

- wherein said reference axis is a longitudinal axis of the projectile or is coaxial with a longitudinal axis of the projectile;
- wherein said second position is aft with respect to said first position along said reference axis, or, wherein said second position is forward with respect to said first position along said reference axis;
- wherein said external walls are configured for deploying from said undeployed configuration to said deployed configuration in directions along more than one axis orthogonal to said reference axis;
- wherein said external walls are configured for deploying from said undeployed configuration to said deployed configuration in a plurality of radial directions away from said reference axis;
- wherein said body circumferentially encloses said reference axis in planes orthogonal to said reference axis;
- wherein said body is generally axisymmetric with respect to said reference axis;
- wherein said apparatus is in the form of a flare module.

6. The apparatus according to any one of claims 1 to 5, wherein said deployed external geometry defines a generally frusto-conical form or a generally cylindrical form.

7. The apparatus according to claim 6, wherein said frusto-conical form has an external diameter that increases in an aft direction with respect to the projectile.

8. The apparatus according to any one of claims 2 to 7, wherein said nominal external surface geometry defines a non generally frusto-conical form.

9. The apparatus according to any one of claims 1 to 8, including one of the following:

- wherein in said deflated configuration said external walls are accommodated within a cylindrical envelope having a diameter within ±10% of a baseline diameter, wherein the baseline diameter is a diameter of the projectile immediately forward of the apparatus when the apparatus is mounted to the projectile;
- wherein in said deflated configuration said external walls have a generally undulating form, including a plurality of lobes;
- wherein in said deflated configuration said external walls are partially folded at a plurality of fold lines, said fold line being at least partially aligned longitudinally;
- wherein in said deflated configuration said external walls generally at least partially mutual overlapped in a circumferential direction with respect to said reference axis;
- wherein said body has a general toroidal form;
- wherein said external walls comprise a plurality of petals, different from said body, and wherein said plurality of petals forms a flare assembly.

10. The apparatus according to any one of claims 1 to 9, wherein said apparatus is in the form of a fin module, and including one of the following:

- wherein said body comprises a central plug portion and a plurality of fin elements;

- wherein said body comprises a central plug portion and a plurality of fin elements, and, wherein said central plug portion has a circumferential periphery, and wherein said fin elements is circumferentially disposed along said circumferential periphery;
- wherein said plug portion defines an internal plug chamber, and wherein each said fin element defines an internal fin chamber in fluid communication with said internal plug chamber;
- wherein each said fin element has aerofoil sections in planes parallel to and radially spaced from said reference axis;
- wherein each said fin element has aerofoil sections in planes parallel to and radially spaced from said reference axis, and, wherein each said aerofoil section has zero camber;
- wherein each said fin element is configured for deploying from said undeployed configuration to said deployed configuration in a generally radial directions away from said reference axis;
- wherein each said fin element is configured for deploying from said undeployed configuration to said deployed configuration in a generally radial directions away from said reference axis, and, wherein in said undeployed configuration each said fin is in a radially collapsed configuration;
- wherein in said deflated configuration said fin elements are at least partially folded at a plurality of fin fold lines, said fin fold line being at least partially aligned longitudinally;
- wherein in said undeployed configuration said fins adopt a wrap-around configuration with respect to said plug portion;
- wherein in said deployed configuration said fins have a linear configuration, wherein a span of each said fin is rectilinear;
- wherein in said deployed configuration said fins have a non-linear configuration, wherein a span of each said fin is curved.

11. The apparatus according to any one of claims 1 to 10, wherein said body comprises any one of a balloon-type body and a bellows-type body.

12. The apparatus according to any one of claims 1 to 11, wherein said body is configured for providing said deployed external surface geometry to said external walls.

13. The apparatus according to claim 12, including one of the following:

- wherein said body comprises a first longitudinal end, a second longitudinal end longitudinally spaced from said first longitudinal end, an outer wall and an inner wall, wherein said first longitudinal end, said second longitudinal end, said inner wall and said outer wall define a body internal space, wherein said body internal space provides said first volume at said deflated configuration and said second volume at said inflated configuration;
- wherein said body comprises a first longitudinal end, a second longitudinal end longitudinally spaced from said first longitudinal end, and an outer wall, wherein said first longitudinal end, said second longitudinal end, and said external wall define a body internal space, wherein said body internal space provides said first volume at said deflated configuration and said second volume at said inflated configuration;
- wherein said body comprises a first longitudinal end, a second longitudinal end longitudinally spaced from said first longitudinal end, an outer wall and an inner wall, wherein said first longitudinal end, said second longitudinal end, said inner wall and said outer wall define a body internal space, wherein said body internal space provides said first volume at said deflated configuration and said second volume at said inflated configuration, and, wherein at least in the inflated configuration, the first longitudinal end has a larger outer width dimension than the second longitudinal end;
- wherein said body comprises a first longitudinal end, a second longitudinal end longitudinally spaced from said first longitudinal end, and an outer wall, wherein said first longitudinal end, said second longitudinal end, and said external wall define a body internal space, wherein said body internal space provides said first volume at said deflated configuration and said second volume at said inflated configuration, and, wherein at least in the inflated configuration, the first longitudinal end has a larger outer width dimension than the second longitudinal end.

14. The apparatus according to any one of claims 1 to 13, wherein at least a portion of said external walls is elastic, deforming between a first shape corresponding to said deflated configuration and a second shape corresponding to said inflated configuration.

15. The apparatus according to any one of claims 1 to 14, wherein said apparatus is in the form of an aft module configured for being mounted with respect to an aft end of the projectile.

16. The apparatus according to any one of claims 1 to 15, wherein said apparatus is in the form of an aft module configured for providing longitudinal stability to the projectile.

17. The apparatus according to any one of claims 1 to 16, wherein the body remains inflated after attaining the inflated configuration.

18. A projectile comprising an apparatus as defined in any one of claims 1 to 17, the projectile being a shell.

19. An aft module for use with a projectile, comprising a body configured for being mounted with respect to the projectile, the body having a reference axis, an external surface and an internal volume, said body being inflatable from a deflated configuration to an inflated configuration, wherein in said inflated configuration said external surface has a generally frusto-conical configuration.

20. An aft module for use with a projectile, comprising a body configured for being mounted with respect to the projectile, the body having a reference axis, a plug portion and a plurality of inflatable fin elements, said body being inflatable from a deflated configuration to an inflated configuration, wherein in said inflated configuration said fin elements project radially away from said reference axis by a first radius, and wherein in said deflated configuration said fin elements project radially away from said reference axis by a second radius, said first radius being greater than said second radius.

21. A method for operating a projectile, comprising:

- **(a)** providing the projectile, the projectile comprising an apparatus as defined in any one of claims 1 to 17;
- **(b)** at said predetermined conditions, selectively activating said inflation system to thereby inflate said body from said deflated configuration to said inflated configuration, and concurrently deploying said external walls from said undeployed configuration to said deployed configuration.