What is claimed is:

~~1. An embolic protection device comprising:~~

~~a catheter having a proximal end, a distal end, and a lumen extending from the proximal end to the distal end along a longitudinal axis of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;~~

~~a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame and the frame defines an opening of the embolic filter;~~

~~a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism; and~~

~~a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable, and when longitudinally retracted, is configured to bend the frame longitudinally toward the proximal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter.~~

~~2. The embolic protection device of claim 1, wherein the wire is coupled to the frame at a distal coupling.~~

~~3. The embolic protection device of either of claims 1 or 2, wherein the wire, when longitudinally retracted to a proximal position, is configured to bend the frame so that the opening of the embolic filter defined by the frame is substantially perpendicular to the longitudinal axis of the catheter.~~

~~4. The embolic protection device of any one of claims 1-3, wherein the wire, when longitudinally advanced to a distal position, is configured to position the frame so that the opening of the embolic filter defined by the frame is substantially parallel or angled less than 45 degrees with respect to longitudinal axis of the catheter.~~

~~5. The embolic protection device of any one of claims 1-4, wherein embolic protection device has a handle, wherein the handle comprises a mechanism configured to advance or retract the wire.~~

~~6. The embolic protection device of any one of claims 1-5, wherein embolic protection device has a handle, wherein the handle comprises a mechanism configured to advance or retract the deployment mechanism.~~

~~7. The embolic protection device of any one of claims 1-6, wherein the opening of the embolic filter defined by the frame is substantially in the shape of an ellipse.~~

~~8. The embolic protection device of any one of claims 1-7, wherein the catheter extends through the opening of the embolic filter.~~

~~9. The embolic protection device of any one of claims 1-8, wherein the distal portion of the catheter comprises a radiopaque marker.~~

~~10. The embolic protection device of claim 9, wherein the radiopaque marker comprises one or more circumferential bands.~~

~~11. The embolic protection device of any one of claims 1-10, wherein the frame comprises a shape memory material.~~

~~12. The embolic protection device of any one of claims 1-11, wherein the embolic filter comprises a filter medium, which comprises a semi-permeable polyurethane material having a pore size of from about 100 microns to about 150 microns.~~

~~13. The embolic protection device of any one of claims 1-12, wherein the embolic protection device comprises a longitudinal groove along an outer surface of the embolic protection device.~~

~~14. The embolic protection device of any one of claims 1-13, further comprising a self-expanding deflector coupled to the catheter, proximal to the distal portion, wherein the deflector has a longitudinal axis parallel to the longitudinal axis of the catheter.~~

15. The embolic protection device of any one of claims 1-14, wherein the deployment mechanism comprises a sheath that is circumferentially disposed around at least a portion of the catheter, wherein the sheath deploys the self-expanding embolic filter when the sheath is at least partially longitudinally retracted.

16. The embolic protection device of any one of claims 1-15, wherein the distal portion of the catheter comprises one or more apertures that communicates with the lumen of the catheter.

17. A method of capturing embolic debris during a closed-heart procedure, the method comprising:

inserting a distal end of a embolic protection device into a body lumen, the embolic protection device comprising:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end to the distal end along a longitudinal axis of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame, and the frame defines an opening of the embolic filter;

a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism; and

a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable, and when longitudinally retracted, bends the frame longitudinally toward the proximal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter; and

tracking the lumen of the catheter over the guidewire that is percutaneously inserted into the body lumen.

18. The method of claim 17, further comprising at least partially longitudinally retracting the guidewire from the lumen of the catheter so that the distal portion of the catheter assumes a generally arcuate shape being at least a semi-circle.

19. The method of either of claims 17 or 18, wherein the distal portion of the catheter comprises a radiopaque marker; the method further comprising positioning the catheter by visualizing the radiopaque marker using an imaging technique.

20. The method of any one of claims 17-19, further comprising at least partially longitudinally retracting the deployment mechanism and allowing the self-expanding embolic filter to assume an expanded, deployed configuration.

21. The method of any one of claims 17-20, further comprising longitudinally retracting the wire, thereby bending the frame longitudinally toward the proximal end of the catheter and laterally outward from the catheter, wherein the opening defined by the frame substantially spans the body lumen.

22. The method of any one of claims 17-20, further comprising longitudinally retracting the wire to a proximal position, thereby bending the frame so that the opening of the embolic filter defined by the frame is substantially perpendicular to the longitudinal axis of the catheter, wherein the opening defined by the frame substantially spans the body lumen.

23. The method of any one of claims 17-22, wherein the embolic filter is movably coupled to the catheter and is longitudinally moveable with respect to the catheter; the method further comprising longitudinally moving the embolic filter with respect to the catheter.

24. The method of any one of claims 17-23, wherein the embolic protection device further comprises a self-expanding deflector coupled to the catheter, proximal to the distal portion; the method further comprising deploying the self-expanding deflector to direct embolic debris toward the embolic filter.

25. The method of any one of claims 17-24, wherein the deployment mechanism is a sheath that is circumferentially disposed around at least a portion of the catheter.

26. The method of any one of claims 17-25, wherein the distal portion of the catheter comprises one or more apertures that communicate with the lumen of the catheter; the method further comprising perfusing a fluid into the body lumen through the one or more apertures.

27. The method of any one of claims 17-26, wherein the embolic protection device comprises a longitudinal groove along an outer surface of the embolic protection device; the method further comprising inserting a second catheter device alongside the embolic protection device by tracking the second catheter device along the groove.

28. The method of claim 27, wherein the second catheter device is advanced past the embolic filter of the embolic protection device while the embolic filter is in a deployed configuration.

29. A method of capturing embolic debris during a closed-heart procedure, the method comprising:

inserting a distal end of a embolic protection device into a body lumen, the embolic protection device comprising:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end of the catheter to the distal end of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame, and the frame defines an opening of the embolic filter;

a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism;

a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable, and when longitudinally retracted, bends the frame longitudinally toward the proximal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter; and

tracking the lumen of the catheter over the guidewire that is percutaneously inserted into the body lumen;

at least partially longitudinally retracting the guidewire from the lumen of the catheter, so that the distal portion of the catheter assumes a generally arcuate shape being at least a semi-circle upon retracting the guidewire from the distal portion of the catheter;

longitudinally retracting the deployment mechanism and deploying the self-expanding embolic filter; and

longitudinally retracting the wire and bending the frame of the embolic filter longitudinally toward the proximal end of the catheter and laterally outward from the catheter.

30. A method for capturing embolic debris during a closed-heart procedure comprising:

(i) providing an embolic protection device, wherein the embolic protection device comprises:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end of the catheter to the distal end of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame and the frame defines an opening of the embolic filter;

a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism; and

a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable, and when longitudinally retracted, is configured to bend the frame longitudinally toward the proximal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter; and

(ii) inserting a distal end of the embolic protection device into a body lumen by tracking the lumen of the catheter over a guidewire that is percutaneously inserted into the body lumen; and

~~(iii) longitudinally retracting the deployment mechanism and deploying the a self-expanding embolic filter.~~

~~31.~~1. An embolic protection device comprising:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end to the distal end along a longitudinal axis of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame, ~~and~~ wherein

the frame defines an opening of the embolic filter, and

the frame includes

a fixed portion coupled to the catheter, proximal to the distal portion, wherein the fixed portion does not move in a longitudinal direction, and

a moveable portion continuous with the fixed portion of the frame;

a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism;

a wire coupled to the movable portion of the frame ~~of the embolic filter~~, wherein the wire is longitudinally movable with respect to the catheter and urges the movable portion of the frame;

when the wire is longitudinally advanced, in a distal direction, to a first position, the wire is configured to urge the movable portion of the frame in a longitudinal direction and bend the frame longitudinally towards the distal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter and expands to a first diameter; and

when the wire is longitudinally advanced, in a distal direction, to a second position distally farther than the first position, the wire is configured to urge the movable portion of the frame and extend the frame radially outward from the catheter, such that the opening of the embolic filter expands to a second diameter larger than the first diameter.

~~32.~~2. The embolic protection device of claim ~~3~~1, wherein the wire, when longitudinally advanced to the first position, is configured to bend the frame so that the opening of the embolic filter defined by the frame is substantially perpendicular to the longitudinal axis of the catheter.

~~33.~~3. The embolic protection device of ~~any one of claims 31 or 32~~ claim 1 or claim 2, wherein the wire, when longitudinally retracted to a proximal position, is configured to position the frame so that

the opening of the embolic filter defined by the frame is substantially parallel or angled less than 45 degrees with respect to the longitudinal axis of the catheter.

~~34.~~4. The embolic protection device of ~~claim 31~~ any one of claims 1-3, wherein the frame includes two sides; and

each side of the frame extending generally in a first lateral direction away from the catheter and then looping back on an opposite side around the catheter, and extending generally in the opposite lateral direction before converging and meeting to form the opening of the embolic filter having a substantially elliptical, ovular or circular shape.

~~35. The embolic protection device of claim 31, wherein the frame includes~~

~~a fixed portion coupled to the catheter, proximal to the distal portion, wherein the fixed portion does not move in a longitudinal direction; and~~

~~a movable portion continuous with the fixed portion of the frame, wherein the movable portion is coupled to the wire and is urged by the wire;~~

~~when the wire is advanced to the first position, the wire urges the movable portion of the frame, in a longitudinal direction, towards the distal end of the catheter and bends the frame to expand the opening of the embolic filter to the first diameter; and~~

~~when the wire is advanced to the second position, the wire urges the movable portion of the frame, in a radial direction, away from the catheter and extends the frame to expand the opening of the embolic filter to the second diameter.~~

~~36.~~5. The embolic protection device of ~~claim 35~~ any one of claims 1-4, further comprising an outer catheter disposed around at least a portion of the catheter and coaxial with the lumen of the catheter, wherein the outer catheter is longitudinally slidable over the catheter; and

wherein the wire is coupled to a distal portion of the outer catheter such that the wire is moved by the outer catheter sliding over the catheter.

~~37.~~6. The embolic protection device of claim ~~36~~5, further comprising an inner catheter disposed between the outer catheter and the catheter, wherein the inner catheter is longitudinally slidable over the catheter**; ~~and~~**

a top guide attached at one end to a distal portion of the inner catheter so that the top guide is moved by the inner catheter sliding over the catheter, wherein the top guide slidably receives the movable portion of the frame causing the top guide to flex outwardly away from the catheter; and

a bottom guide attached at one end to the catheter, wherein the bottom guide and the top guide are arranged on opposite sides of the catheter, and wherein the bottom guide receives the fixed portion of the frame causing the bottom guide to flex outwardly away from the catheter.

~~38. The embolic protection device of claim 37, wherein the guide is a top guide and the embolic protection device further comprising a bottom guide attached at one end to the catheter, wherein the bottom guide and the top guide are arranged on opposite sides of the catheter, and wherein the bottom guide receives the fixed portion of the frame causing the bottom guide to flex outwardly away from the catheter.~~

~~39.~~7. The embolic protection device of any one of claims ~~31-35~~1-6, wherein embolic protection device has a handle, wherein the handle comprises a mechanism configured to advance or retract the wire.

~~40.~~8. The embolic protection device of ~~claim 37~~ any one of claims 1-6, further comprising:

a handle coupled to the proximal end of the catheter;

a top pull coupled to a proximal portion of the outer catheter and is longitudinally movable within the handle;

a bottom pull coupled to a proximal portion of the inner catheter and is longitudinally movable within the handle, wherein the bottom pull is in temporary engagement with the top pull;

when the top pull and the bottom pull are engaged, the top pull and the bottom pull are moved in unison by movement of a slider, which, in turn, urges the guide together with the movable portion of the frame in the longitudinal direction and expands the opening of the embolic filter to the first diameter; and

when the top pull and the bottom pull are disengaged, the top pull is moved without the bottom pull by movement of the slider, which, in turn, urges the movable portion of the frame in the radial direction and expands the opening of the embolic filter to the second diameter.

~~41.~~9. The embolic protection device of any one of claims ~~31-40~~1-8, wherein the catheter extends through the opening of the embolic filter.

~~42.~~10. The embolic protection device of any one of claims ~~31-41~~1-9, wherein the distal portion of the catheter comprises a radiopaque marker.

~~43.~~11. The embolic protection device of claim ~~42~~10, wherein the radiopaque marker comprises one or more circumferential bands.

~~44.~~12. The embolic protection device of any one of claims ~~31-43~~1-11, wherein the frame comprises a shape memory material.

~~45.~~13. The embolic protection device of any one of claims ~~31-44~~1-12, wherein the embolic filter comprises a filter medium, which comprises a semi-permeable polyurethane material having a pore size of from ~~about~~ 100 microns to ~~about~~ 150 microns.

~~46.~~14. The embolic protection device of any one of claims ~~21-45~~1-13, wherein the embolic protection device comprises a longitudinal groove along an outer surface of the catheter ~~embolic protection device~~, the groove configured to guide a second catheter device inserted alongside the embolic protection device.

~~47.~~15. The embolic protection device of any one of claims ~~31-46~~1-14, wherein the deployment mechanism comprises a sheath that is circumferentially disposed around at least a portion of the catheter, wherein the sheath deploys the self-expanding embolic filter when the sheath is at least partially longitudinally retracted.

~~48.~~16. The embolic protection device of any one of claims ~~31-47~~1-15, wherein the distal portion of the catheter comprises one or more apertures that communicates with the lumen of the catheter.

~~49. A method of capturing embolic debris during a closed-heart procedure, the method comprising:~~

~~inserting a distal end of a embolic protection device into a body lumen, the embolic protection device comprising:~~

~~a catheter having a proximal end, a distal end, and a lumen extending from the proximal end to the distal end along a longitudinal axis of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;~~

~~a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame and the frame defines an opening of the embolic filter;~~

~~a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed~~

configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism;

a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable with respect to the catheter;

when the wire is longitudinally advanced, in a distal direction, to a first position, the wire is configured to bend the frame longitudinally towards the distal end of the catheter and laterally outward from the catheter, such that the opening of the embolic filter generally faces the distal end of the catheter and expands to a first diameter; and

when the wire is longitudinally advanced, in the distal direction, to a second position distally farther than the first position, the wire is configured to extend the frame radially outward from the catheter, such that the opening of the embolic filter expands to a second diameter larger than the first diameter; and

tracking the lumen of the catheter over the guidewire that is percutaneously inserted into the body lumen.

50. The method of claim 49, further comprising at least partially longitudinally retracting the guidewire from the lumen of the catheter so that the distal portion of the catheter assumes a generally arcuate shape being at least a semi-circle.

51. The method of either of claims 49 or 50, wherein the distal portion of the catheter comprises a radiopaque marker; the method further comprising positioning the catheter by visualizing the radiopaque marker using an imaging technique.

52. The method of any one of claims 49-51, further comprising at least partially longitudinally retracting the deployment mechanism and allowing the self-expanding embolic filter to assume an expanded, deployed configuration.

53. The method of claim 49-52, further comprising longitudinally advancing the wire to the first position, thereby bending the frame longitudinally towards the distal end of the catheter and laterally outward from the catheter, and expanding the opening of the embolic filter to the first diameter, which substantially spans the body lumen.

54. The method of claim 53, further comprising longitudinally advancing the wire to the second position distally farther than the first position, thereby extending the frame radially

outward from the catheter and expanding the opening of the embolic filter to the second diameter larger than the first diameter, which substantially spans the body lumen.

55. The method of any one of claims 49-52, further comprising longitudinally advancing the wire to the first position, thereby bending the frame so that the opening of the embolic filter defined by the frame is substantially perpendicular to the longitudinal axis of the catheter, wherein the opening defined by the frame, substantially spans the body lumen.

56. The method of any one of claims 49-55, wherein the deployment mechanism is a sheath that is circumferentially disposed around at least a portion of the catheter.

57. The method of any one of claims 49-56, wherein the distal portion of the catheter comprises one or more apertures that communicate with the lumen of the catheter; the method further comprising perfusing a fluid into the body lumen through the one or more apertures.

58. The method of any one of claims 49-57, wherein the embolic protection device comprises a longitudinal groove along an outer surface of the embolic protection device; the method further comprising inserting a second catheter device alongside the embolic protection device by tracking the second catheter device along the groove.

59. The method of claim 58, wherein the second catheter device is advanced past the embolic filter of the embolic protection device while the embolic filter is in a deployed configuration.

60. A method of capturing embolic debris during a closed-heart procedure, the method comprising:

inserting a distal end of a embolic protection device into a body lumen, the embolic protection device comprising:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end of the catheter to the distal end of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame and the frame defines an opening of the embolic filter;

a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism; and

a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable with respect to the catheter;

tracking the lumen of the catheter over the guidewire that is percutaneously inserted into the body lumen**;**

at least partially longitudinally retracting the guidewire from the lumen of the catheter, so that the distal portion of the catheter assumes a generally arcuate shape being at least a semi-circle upon retracting the guidewire from the distal portion of the catheter;

longitudinally retracting the deployment mechanism and deploying the self-expanding embolic filter;

longitudinally advancing the wire, in a distal direction, to a first position, thereby bending the frame longitudinally towards the distal end of the catheter and laterally outward from the catheter, and expanding the opening of the embolic filter to a first diameter.

61. The method of claim 60, further comprising longitudinally advancing the wire, in the distal direction, to a second position distally farther than the first position, thereby extending the frame radially outward from the catheter and expanding the opening of the embolic filter to a second diameter larger than the first diameter.

62. A method for capturing embolic debris during a closed-heart procedure comprising:

(i) providing an embolic protection device, wherein the embolic protection device comprises:

a catheter having a proximal end, a distal end, and a lumen extending from the proximal end of the catheter to the distal end of the catheter, wherein the lumen is configured to house a guidewire, and a distal portion of the catheter that assumes a generally arcuate shape being at least a semi-circle when the guidewire is at least partially longitudinally retracted;

~~a self-expanding embolic filter that is disposed around the catheter, proximal to the distal portion, wherein the embolic filter comprises a frame and the frame defines an opening of the embolic filter;~~

~~a deployment mechanism that is disposed around at least a portion of the catheter, wherein the deployment mechanism is longitudinally movable with respect to the catheter, the deployment mechanism is configured to contain the embolic filter in a collapsed configuration, and the embolic filter is configured to self-expand upon longitudinal retraction of the deployment mechanism; and~~

~~a wire coupled to the frame of the embolic filter, wherein the wire is longitudinally movable with respect to the catheter; and~~

~~(ii) inserting a distal end of the embolic protection device into a body lumen by tracking the lumen of the catheter over a guidewire that is percutaneously inserted into the body lumen;~~

~~(iii) longitudinally retracting the deployment mechanism and deploying the a self-expanding embolic filter; and~~

~~(iv) longitudinally advancing the wire, in a distal direction, to a first position, thereby bending the frame longitudinally towards the distal end of the catheter and laterally outward from the catheter, and expanding the opening of the embolic filter to a first diameter.~~

~~63. The method of claim 62, further comprising longitudinally advancing the wire, in the distal direction, to a second position distally farther than the first position, thereby extending the frame radially outward from the catheter and expanding the opening of the embolic filter to a second diameter larger than the first diameter.~~