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The invention claimed is:

1. A magnetoresistive sensing apparatus, comprising:
a magnetic film having a zig-zag shaped structure, a central axis, and a magnetization associated with said magnetic film, wherein said zig-zag shaped structure biases said magnetization direction alternately at positive and negative angles thereof, thereby permitting said magnetoresistive sensing apparatus to be sensitive to a magnetic field parallel to said axis of said magnetoresistive sensing apparatus and insensitive to magnetic fields perpendicular to said axis.
2. The apparatus of claim 1 wherein said zig-zag shaped structure creates a positive bias angle of said magnetization direction relative to a current direction of with said magnetic film.
3. The apparatus of claim 1 wherein said magnetoresistive sensing apparatus comprises an anisotropic magnetoresistive sensor.
4. The apparatus of claim 1 wherein said magnetic film comprises a thin magnetic film.
5. The apparatus of claim 4 wherein said thin magnetic film comprises NiFe.
6. The apparatus of claim 4 wherein said thin magnetic film comprises a thickness of approximately 30 nm.
7. The apparatus of claim 1, wherein said magnetoresistive sensing apparatus detects magnetic fields along a particular direction, while retaining data indicative of the polarity of saturating fields in said particular direction.
8. The apparatus of claim 1 wherein said magnetoresistive sensing apparatus retains data indicative of an amplitude of said magnetic field applied to said axis of said magnetic film.
9. The apparatus of claim 1 wherein said zig-zag shaped structure of said magnetic film utilizes its geometry to bias said magnetization direction on a single layer element composing said magnetic film.
10. The apparatus of claim 1 wherein said magnetic film is adapted for use as a data storage element.
11. A magnetoresistive sensing apparatus, comprising:
anisotropic magnetoresistive sensor comprising a thin magnetic film having a zig-zag shaped structure,
wherein said thin magnetic film is adapted for use as a data storage element;
a central axis associated with said zig-zag shaped structure;
and
a magnetization associated with said thin magnetic film,
wherein said zig-zag shaped structure biases said magnetization direction alternately at positive and negative angles thereof, thereby permitting said magnetoresistive sensing apparatus to be sensitive to a magnetic field parallel to said axis of said magnetoresistive sensing apparatus and insensitive to magnetic fields perpendicular to said axis, and wherein said zig-zag shaped struc-

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- ture creates a positive bias angle of said magnetization direction relative to a current direction of with said thin magnetic film.
12. The apparatus of claim 11, wherein said magnetoresistive sensing apparatus detects magnetic fields along a particular direction, while retaining data indicative of the polarity of saturating fields in said particular direction.
13. The apparatus of claim 11, wherein said magnetoresistive sensing apparatus retains data indicative of an amplitude of said magnetic field applied to said axis of said thin magnetic film.
14. The apparatus of claim 11, wherein said zig-zag shaped structure of said magnetic film utilizes its geometry to bias said magnetization direction on a single layer element composing said thin magnetic film.
15. The apparatus of claim 11 wherein said thin magnetic film comprises a thickness of approximately 30 nm.
16. A magnetoresistive sensing method, comprising:
configuring an anisotropic magnetoresistive sensor to comprise a thin magnetic film having a zig-zag shaped structure, such that said thin magnetic film is adaptable for use as a data storage element;
providing said aid zig-zag shaped structure with a central axis; and
configuring said thin magnetic film with a magnetization, wherein said zig-zag shaped structure biases said magnetization direction alternately at positive and negative angles thereof, thereby permitting said magnetoresistive sensing apparatus to be sensitive to a magnetic field parallel to said axis of said magnetoresistive sensing apparatus and insensitive to magnetic fields perpendicular to said axis, and wherein said zig-zag shaped structure creates a positive bias angle of said magnetization direction relative to a current direction of with said thin magnetic film.
17. The method of claim 11, wherein said magnetoresistive sensing apparatus detects magnetic fields along a particular direction, while retaining data indicative of the polarity of saturating fields in said particular direction.
18. The method of claim 15, wherein said magnetoresistive sensing apparatus retains data indicative of an amplitude of said magnetic field applied to said axis of said thin magnetic film.
19. The method of claim 15, wherein said zig-zag shaped structure of said magnetic film utilizes its geometry to bias said magnetization direction on a single layer element composing said thin magnetic film.
20. The method of claim 15 further comprising configuring said thin magnetic film with a thickness of approximately 30 nm.

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