Introduction to Rodin Coil Design

Col. Thomas Bearden, Associate Editor Alternative Energy Research

There exists a valid Electromagnetic mechanism that will produce the effects reported in the article to follow and other similar effects as well. It is not magic, but electromagnetics of a special kind.

Simply, the magnetic vector potential A is "defined" by the equation B = VxA. If you "choke off" or "kill" the Vx operator (which is called the "curl" operator), then this leaves the curt-free A-potential to move out on its own, without being tied to a magnetic force field (i.e., to a B-field) as it almost always otherwise is. In other words, one has tom the potential away from its associated force field, and the potential propagates independently in space. However, anything you place in the path of that curl-free A-potential to interact with it, that will once again permit the Vx operator to occur, will provide you a normal magnetic force field (B-field) again. Since the Vx usually occurs in, say, something like a coil or wrapping of a conductor, then you get the E-field induced also, by the time rate of change of the A-potential, so that you wind up with a normal EM field containing both E and B fields. The E-field occurs by the interaction of E = -aA)'t. One of the great promises of curl-free A-field utilization is that it propagates into and through media in which normal EM transmission is difficult or impossible, as pointed out in the Gelinas patents.

Obviously if you hold all the B-field inside the coils of the torus, and then put something else in the center region outside the coils, you can get some additional potential and field energy there in the center works. You can also get similar propagation outside the coil, with effects on distant objects.

Rodin is apparently going by elementary electricity concepts but augmented by excellent native intuition. What he really is doing is attempting to separate the A-potential (i.e., the magnetic vector potential A) from the B field, and utilize the curl-free A-potential as an independent field of nature in the central "crossover" region.

It is known in physics that this is possible ; the well known Aharonov-Bohm effect depends upon precisely this separation. It appears that neither Ramsay nor Rodin are aware that a tightly-wound torus performs this' "curl-free" separation of the A-potential, by trapping the B-field inside the coiled wiring, so that in a very good torus coil most of the B-field can be contained within the coil, and the curl-free A-potential will still radiate from the coil (both to its inside or center space and outside and beyond into space.).

A great deal of work on this use of the "curl-free A-field" was done by Gelinas, who patented several patents in this area which were assigned to Honeywell, Inc., the firm for which he worked at the time.

Professor William Tiller of Stanford University is also a noted and highly competent advocate of the curl-free A-field. In the late 70s and early 80s, Bill Tiller, Frank Golden and I worked on curl-free A-potential antennas, and Golden built dozens of curl-free A-field coil antenna variants. One of the most interesting variants he built was quite similar to Ramsay's buildup of the Rodin coil. Simply, he built a coil embodiment of the diagrammatic geometry for a "twistor" that was shown by Roger Penrose. That coil antenna exhibited about what Ramsay and Rodin are reporting, and dramatically extended the communication range of a small CB radio from, say, its nominal 114 mile to about 200 miles or more. The A-potential from a dipole antenna falls off about inversely as the square of the distance, while the normal B-field falls off about inversely as the cube of the distance.

There is one other fact that deepens the curl-free A-potential phenomenon: Any vector field can be replaced by (mathematically decomposed into) two scalar fields; for the proof, see Whittaker 1904. With some difficulty one can even "assemble" a curl-free A-potential from two multifrequency transmitter arrays that transmit two harmonic series of wavepairs, where each wavepair consists of a normal EM wave and its true phase conjugate (for the proof, see Whittaker 1903). Each of the arrays transmits one of the scalar fields (scalar waves) that together comprise the curl-free A-potential. So the curl-free A-potential is actually a part of the Stoney/Whittaker scalar electromagnetics I have so long advocated. At any rate, Rodin and Ramsay should certainly continue their research and experimentation.

References (from about 300 or more pertinent papers in the literature):

1. Raymond C. Gelinas, U.S. Patent No. 4,429,280, "Apparatus and Method for Demodulation of a Modulated Curl-Free Magnetic Vector Potential Field" Jan. 31,1984.

2. Raymond C. Gelinas, U.S. Patent No. 4,429,288, "Apparatus and Method for Modulation of a Curl-Free Magnetic Vector Potential Field." Jan. 31, 1984.

3. Raymond C. Gelinas, U.S. Patent No. 4,432,098, "Apparatus and Method for Transfer of Information by Means of a Curl-Free Magnetic Vector Potential Field." Feb. 14,1984.

4. Raymond C. Gelinas, U.S. Patent No. 4,447, 779, "Apparatus and Method for Determination of a Receiving Device Rrlative to a Transmitting Device Utilizing a Curl-Free Magnetic Vector Potential Field." May 8, 1984.

5. W. Ehrenberg and RE Siday, Pros Pbys. Soc.(London),Vol. B62,1949, p. 8.

6. Y. Aharonov and D. Bohm, "Significance of Electromagnetic Potentials in the Quantum Theory, Phys. Rtv., VoL 115, No. 3, Aug. 1, 1959, p. 485-491.

7. RC. Jaklevic et al., Phys. Rev., Vol. 140, 1965, p. A162

8. S. Akira Tonomura et at., "Observations of Aharonov-Bohm Effect by Electron Holography," Phys. Rev. Lett., Vol 48, NO. 21 May 24, 1982, p. 1443.

9. V.L. Lyuboshitz et al., 'The Aharonov-Bohm Effect in a Toroidal Solenoid," Soy. Phys.,DEPT VoL 48, No. 1, July 1978.

10. T.I. Guseynova, "Calculation of the Vector Potential of a Toroidal Electromagnetic Device," FM translation number FTD-ID(RS)-0352-86, Apr. 11, 1986.

11. Raymond C. Gelinas, "Curl-Free Vector Potential Effects in a Simply Connected Space," Casncr and Gelinas Co., Inc., Cambridge, MA, 1986.

12. Ye. M. Serebryany, Polarization of Vacuum by the Magnetic Flue The Effect of Aharonov-Bohm,' FTD translation number F rD-ID(RS) T-0398-86, May 16,1986.

13. E.T. Whittaker, "On an Expression of the Electromagnetic Field Due to Electrons by Means of Two Scalar Potential Functions," Proceedings of the London Mathematical Society, Series 2, Vol. 1, 1904, p. 367-372.

14. E.T. Whittaker, 'On the Partial Differential E ICU, of Mathematical Physics,' Mathematische Annalen, Vol. 57, 1903, p. 333-355.

15. G J. Stoney, "On a Supposed Proof of a Theorem in Wave-motion," Letter to the Editor, Philosophical Magazine, 5(43), 1897, p. 368-373.

16. Capt.Robert M. Collins, "Soviet Research on the A-Vector Potential and Scalar Waves (U), M -2660P-127/20-87, Dec. 8, 1986.