Separation of the Magnetic Field into Parts Produced by Internal and External Sources[1] DAVID LAZANJA, ALLEN BOOZER, Columbia University — Given the total magnetic field on a toroidal plasma surface, a method for decomposing the field into a part due to internal currents (often the plasma) and a part due to external currents is presented. The decomposition exploits Laplace theory which is valid in the vacuum region between the plasma surface and the chamber walls. The method does not assume toroidal symmetry, and it is partly based on Merkel's 1986 work on vacuum field computations. A change in the plasma shape is produced by the total normal field perturbation on the plasma surface. This method allows a separation of the total normal field perturbation into a part produced by external currents and a part produced by the plasma response.

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