



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Brian J. Vallelunga	Project Number J0833
Project Title Levitation	
Abstract Objectives/Goals The objective of this experiment is to produce a flying machine capable of sustained flight without wings or a visible propulsion system. The lifter will levitate using only the Biefeld-Brown effect. Methods/Materials The methods used in this scientific investigation are experimental and theoretical calculation of lift generated as given by the Evgenij Barsoukov equations. These equations can be found in the Lifter Theory article by said author. The materials used in this scientific project can be organized into three categories: Project Apparatus: - Plywood board; - GRA10 Anti-Gravity Driver; - PS8C 13.8 VDC Power Supply; - Emitter and Collector PVC Tower Assembly; - Black Spray Paint; - Plexiglass sheet; - Various hardware components. Lifter: - Balsa Wood (2mm by 6mm); - Super glue; - Aluminum Foil; - Stainless steel wire (0.0028"); - 30-Gauge enameled copper magnet wire; - Sewing thread; - Scotch tape; - Washers; - Hobby knife; - Scissors. Test Equipment: - Fluke 80K-40 high voltage probe; - Fluke 8021B digital multimeter; - Ohaus triple beam balance; - Various cables. Results The results of the test data collected compared very favorably to 2x the predicted values given by the Evgenij Barsoukov equations. The lifter was able to maintain sustained flight using only the Biefeld-Brown effect. Conclusions/Discussion This scientific exploration conclusively proves that lift can be achieved using only the Biefeld-Brown effect. The lifter levitates because the emitter wire creates a positively charged ion cloud that is accelerated towards the negatively charged collector creating a net vertical force. Simultaneously, the negatively charged collector is attracted to the positively charged ionic cloud adding to the net vertical thrust generated by the lifter. In conclusion, the lifter can generate sufficient thrust to overcome its own weight and levitate solely by the Biefeld-Brown effect.	
Summary Statement This project explores a lifting body without wings or a visible source of propulsion using only the Biefeld-Brown effect.	
Help Received Dr. Wunder gave me encouragement, mother helped me with the board, father help me understand the science and build the apparatus, Mr. Varda provided the triple beam balance and Mr. Foster also a source of encouragement.	