



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Gwendolyn Chang	Project Number S1605
Project Title Use of Magnetic Fields to Prevent Earth Impacts by Near Earth Objects	
Abstract Objectives/Goals Objective: Make the Near Earth Object change its direction by using magnetic power. The project might also be used to control space traffic by using the same idea of magnetic force. Hypothesis: The Near Earth Object travels toward Earth at a velocity (V_m), if a transverse force is applied to it, then the NEO will have a transverse velocity (V_t) at right angles to its direction. The NEO will have a velocity with the components (V_m) and (V_t), so that it will change its trajectory to a new direction that is the composite velocity (V_e), and it will miss Earth. Methods/Materials Change the trajectory to deflect the asteroid past Earth. In this project, a magnetic field generator (MFG) can be created, and it will use magnetic force to alter its path. Superconductor technology can be used to create a magnetic field generator (MFG). A MFG would be used to change the trajectory of asteroid by magnetic force. Results 1) In the mechanic science analysis, the action force depends on the action time and the distance of the action from the Earth. The farther action or (and) longer the time, the less force will be required. 2) The action forces are powered by the magnetic field. According to Ampère's law and the formula for magnetic moments says that if the force is a constant, then how strong the magnetic field is depends on the electric current and length of current flowing through the conductor. 3) a) Creating a Magnetic Field Generators (MFG) b) Creating a second magnetic field on the NEO Conclusions/Discussion Through this project the trajectory of any NEO that poses a threat to the Earth was changed. With the superconductor technology development and application, it will bring a bright future to the Magnetic Field Generators (MFG). Humans will launch more satellites to track and send different signals, but as these satellites die and take up space, my project might also clear space junk from interfering with new satellites.	
Summary Statement My projects main focus is using magnetic power to change the trajectory of Near Earth Objects (NEO) to prevent impacts with Earth.	
Help Received Dr. Dave Humphreys, Vesa Junkkarinen, and Barney Rickett were my mentors that proof read my project. I did not use a lab.	