

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Lift-Off - Secondary Space Education (2)

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ROCKET MODELS AS MOTIVATOR AGENT IN TEACHING SCIENCES AND MATHEMATICS

**Abstract**

The model rocketry grew quickly in the sixties due to the crescent interest triggered by the space age. Nowadays have many countries and various rocketry associations with large kinds of categories and regulatory agencies. This kind of model has a strong potential of education applications because the students have the possibility to study physics, mathematics, chemistry and general science while they develop their rocket models. University of Brasilia at Gama is an engineering college around 35 km of Brasilia (Brazils capital) and where has being implementing the course of Aerospace Engineering. In order to improve the interest of the local secondary students in aerospace engineering courses and strengthen the learning of science in high school level we propose a pilot education project with the Brasília Military College - a public school in Brasilia. The project Rocket Models as Motivator Agent in Sciences and Mathematics Teaching has as a main aim motivate students to study mathematics and science. The students participated of workshop in languages C and Python programming, besides of electronics classes given by University of Brasilia professors and undergraduate degree students. The high school students, oriented by their physics professor, create programs that could estimate the trajectory of the rockets based of ballistics theory. With the knowledge develop during the project the students using the Arduino electronic platform creates a launch remote controller system. The ignition controller is a safe way of igniting the rockets, due to the flexibility of inserting a given countdown time, so the students could push the ignition button and get away from the rocket We bought many commercial rocketry model motor and the Brasília Military College students in a series of visits at University of Brasilia propulsion laboratory, with supervision of their professor and university professor tested the motors in small bench built specifically for this purpose. After the bench test and integrating the theoretical and practical knowledge the students project their own rocket model with remote launch, calculus of probable impact area, recovery system with parachutes and telemetry. This paper describes the steps of this project, the impact on students study motivation with the objective to stimulates the implementation of this kind of educational project in many others school.