

Collaborative Rocket Experimental Project between Tokai University and University of Alaska Fairbanks

by

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Abstract

The collaborative rocket experiment that is called the Student Rocket Project (SRP) has started in 1995 between Tokai University Shonan (TUS) and University of Alaska Fairbanks (UAF). UAF is the only one university to have a rocket launch site in the world. This program provides students of TUS and UAF with the opportunity to design, to construct and to test sounding rocket payloads that are launched on a non-interference basis from Alaska. This scientific educational program has proven to be very effective in providing students with practical, real-world engineering design experience. The program also allows students to participate in all phases of a sounding rocket mission, in contrast to more traditional sounding rocket or spacecraft projects in which students are only involved with the scientific instrumentation and data analysis.

From August 1996 to March 2001, a total of 41 TUS students and professors have visited Alaska 6 times and a total of 9 UAF students and professors have visited Japan 4 times to hold many SRP meetings and workshops. We basically design, construct and test onboard instruments or mechanical systems and we also make hybrid rockets too. For their successful launch, students are working on computer designing for electronic circuits or separation system, on wind tunnel testing and launching for model rockets and on combustion testing for hybrid rockets.

In January 2000, the first collaborative sounding rocket of that the motor was supplied by NASA, was launched from Alaska and all of payloads were successfully carried to the apogee of 89 km high. Tokai students constructed a fluxgate magnetometer for detecting rocket attitudes during the flight and the magnetometer was carried on the payload. We got a good data of rocket attitude performance on the experiment. We describe about the SRP collaboration and a result of the Tokai instrument in the sounding rocket experiment.

Keywords: rocket experiment, international collaboration project, Student Rocket Project, fluxgate magnetometer

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