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SUCHAI 2 and 3: Scientific grounds and challenges of the new space mission of the University of Chile

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Developing countries and their educational institutions are taking advantage of the CubeSat standard in order to either accelerate or even start space programs. Chile, and in particular the University of Chile, has started a space program based on CubeSats. The first university CubeSat, the Satellite of the University of Chile for Aerospace Investigation 1 (SUCHAI-1), is awaiting launch in a Falcon 9 (Space X). SUCHAI-1 was a proof of concept with simple payloads and experiments. We present the learned lessons of SUCHAI-1 and the process of starting neither a university program funded by sources external to the university in a country without a space agency nor a space program. We also present the university new space mission, which continues the efforts of the first one. The new mission under development involves the construction of 2 3U CubeSat, SUCHAI 2 and 3. The main payloads under design for this mission, and eventually for future more dedicated missions, are: magnetometers, Langmuir probes, dual frequencies GPS receivers and radio beacons. These payloads expect to gather information of the ionosphere. In particular, we will show the current status of the payloads, paying attention to the first designs of them together with the current performance. We analyze the type of physics; we might obtain with these instruments and with the fusion of data among them as well as with ground based instruments such as GNSS receivers, magnetometers networks, ionosondes and Incoherent Scatter Radars (ISRs).

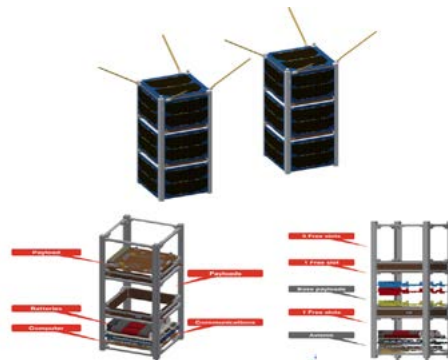


Figure: SUCHAI 2 and 3 buses. They will carry ionospheric/magnetospheric experiments.

Biography

Marcos A Diaz is a Professor in Electrical Engineering department at University of Chile, Santiago, Chile. He completed his Electrical Engineering Degree in 2001 at University of Chile; MS and PhD degrees in Electrical Engineering in 2004 and 2009, respectively at Boston University. His research interests are related to the study of ionospheric turbulent plasma, incoherent scatter radar techniques, and low-frequency-radio-astronomy/space instrumentation and nano-satellite technologies.

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