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**KickSat.org - an open source ChipSat dispenser and citizen  
space exploration proof of concept mission**

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KickSat is a citizen space exploration mission to dispense hundreds of Sprite ChipSat proof-of-concept spacecraft into low Earth orbit, assess their on-orbit performance, and characterise their reentry characteristics. In addition, it is an experiment to evaluate the prospect of crowdsourcing funding for space exploration by public sponsorship of individual affordable small spacecraft within a larger overall mission.

KickSat.org was launched on the community funding platform Kickstarter in October 2011 with the goal of finding at least one hundred members of the public willing to sponsor an individual spacecraft they could call their own. Sponsors typically commit a few hundred dollars each during a 60 day fund raising period and receive as a reward either non-functioning replica spacecraft, a standardised spacecraft they can call their own in space, or a spacecraft in space that they can customise via software. In a little over three weeks, more than 180 individuals had sponsored more than 210 Sprite spacecraft allowing the mission to proceed.

Sprite ChipSat proof-of-concept spacecraft are 32 x 32 x 4 mm / <7.5g spacecraft with TASC solar cells, a TI MSP430 based CC430F5137 system-on-a-chip and antenna. The 10mW digital spread-spectrum signal transmits their identity and a short message on the 70cm amateur satellite service to GENSO compatible ground stations with a suitable FUNcube dongle and driver.

KickSat was originally conceived as a 1U very low cost CubeSat based on the Pumpkin structure. Sprites would be packed internally into spring-loaded silos and retained by a spring-loaded 'smart lid,' which would open on receipt of a command from the ground. Due to the response from the public, the architecture has been upgraded to a 3U CubeSat with an upgraded 1U architecture embedded in each end of the structure and a more sophisticated COTS CubeSat stack in the centre to manage the release of the Sprites and provide housekeeping and telemetry functions.

KickSat replica Sprite and developer kit rewards are expected to be distributed to sponsors in May 2012. An early 2013 ELaNa launch to a sub-ISS orbit (to mitigate space debris concerns) is being sought. If at least four hundred Sprite spacecraft are sponsored then a suitable commercial launch may be sought to accelerate the schedule.

*Preference for presentation: Oral*

*Most suitable session: Session 11: Future technologies on CubeSats, further reduction in the size of CubeSats; Session 10: Other topics (e.g. expandable solar arrays, atmospheric re-entry, CubeSats as free-flying payloads for the exploration of the solar system)*

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