## ABSTRACT

# KUIPER EXPRESS: A SCIENCECRAFT

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The Kuiper Express concept is described. This is Sciencecraft mission to the Kuiper Belt with a flyby of Main Belt Asteroids, Mars, Uranus, Neptune/Triton, and an object in the Kuiper belt (1993 FW). The Kuiper Express is Delta launched, uses a SEEGA trajectory, and has a total flight time of approximately ten years. It uses solar electric propulsion, no nuclear power, and is capable of measuring the surface constituents and morphology of the objects visited as well as characterizing their atmospheres both in emission and absorption (against the Sun). The sensor system and spacecraft subsystems are highly integrated into one unit, with an emphasis on shared functionality, thereby greatly reducing cost and increasing shared redundancies. Mission operations costs are reduced because the design of the integrated sensor system enables conflict-free sequencing to be completed prior to launch. In addition, the design is such that the craft functions in a largely autonomous mode to further reduce mission operations costs.

The concept design, to be described in detail, resulted fi om a highly cooperative effort between the individuals and organizations listed above. New technology was used to solve technical problems, while advances in technology continue to reduce costs and improve efficiencies, A Kuiper Express Sciencecraft configuration was established, along with a technology plan which allows insertion of technology innovations as they become available.