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C3Or3C-04: Four-Stage Pulse Tube Cryocooler for NewATHENA

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Lockheed Martin is one of three teams funded by NASA's Goddard Space Flight Center to build demonstration model cryocoolers for the European Space Agency's Advanced Telescope for High-Energy Astrophysics (NewATHENA) X-ray space telescope mission. The NewATHENA X-ray instrument presents some design challenges, including the requirement to separate the 4.5 K cryogenic stage approximately one meter away from the cold head's warm interface. These challenges led Lockheed Martin to develop a unique "split cold head" configuration. The status of the development model cryocooler will be presented in this paper, along with some trade studies related to the unusual split cold head configuration.

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