

Full-sky Astrometric Mapping Explorer (FAME): Instrument Status

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The FAME project began Phase B development in September 2000. FAME is a MIDEX class NASA Explorer mission that will perform an all-sky, astrometric survey with unprecedented accuracy. FAME will produce an astrometric catalog of 40 million stars between 5th and 15th magnitude. For the bright stars (5th to 9th magnitude) FAME will determine positions and parallaxes accurate to better than 50 microarcseconds, with proper motion errors less than 50 microarcseconds per year. For the fainter stars (between 9th and 15th magnitude) FAME will determine positions and parallaxes accurate to better than 500 microarcseconds, with proper motion errors less than 500 microarcseconds per year. FAME will also collect photometric data on these 40 million stars in four Sloan DSS colors.

The FAME instrument design, integration, and testing is the responsibility of the Lockheed Martin Advanced Technology Center in Palo Alto. Here we present the updated instrument design and discuss some of the trade studies that have been completed or are in progress.

CCD tests are being made to investigate (1) the use of start-stop technique for bright stars with the time delay integration (TDI), (2) techniques for fitting point spread functions under conditions of noise and smearing, (3) the use of charge injection preceding stars to mitigate the effects of traps, and (4) the effects of radiation over the lifetime of the mission.

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