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ABS. ONLY

N94-22544

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p-1 STELAR: An Experiment in the Electronic Distribution of Astronomical Literature

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STELAR (STudy of Electronic Literature for Astronomical Research) is a Goddard-based project designed to test methods of delivering technical literature in machine readable form. To that end, we have scanned a five year span of the ApJ, ApJ Supp, AJ and PASP, and have obtained abstracts for eight leading academic journals from NASA/STI CASI, which also makes these abstracts available through the NASA RECON system. We have also obtained machine readable versions of some journal volumes from the publishers, although in many instances, the final typeset versions are no longer available.

The fundamental data object for the STELAR database is the *article*, a collection of items associated with a scientific paper - abstract, scanned pages (in a variety of formats), figures, OCR extractions, forward and backward references, errata and versions of the paper in various formats (*e.g.*, T_EX, SGML, PostScript, DVI). Articles are uniquely referenced in the database by journal name, volume number and page number.

The selection and delivery of articles is accomplished through the WAIS (Wide Area Information Server) client/server model, requiring only an Internet connection. Modest modifications to the server code have made it capable of delivering the multiple data types required by STELAR.

WAIS is a platform independent and fully open multi-disciplinary delivery system, originally developed by Thinking Machines Corp. and made available free of charge. It is based on the ISO Z39.50 standard communications protocol. WAIS servers run under both UNIX and VMS. WAIS clients run on a wide variety of machines, from UNIX-based X-windows systems to MS-DOS and Macintosh microcomputers. The WAIS system includes full-text indexing and searching of documents, network interface and easy access to a variety of document viewers.

ASCII versions of the CASI abstracts have been formatted for display and the full text of the abstracts has been indexed. The entire WAIS database of abstracts is now available for use by the astronomical community. Enhancements of the search and retrieval system are under investigation to include specialized searches (by reference, author or keyword, as opposed to full text searches), improved handling of word stems, improvements in relevancy criteria and other retrieval techniques, such as factor spaces.

The STELAR project has been assisted by the full cooperation of the AAS, the ASP, the publishers of the academic journals, librarians from GSFC, NRAO and STScI, the Library of Congress and the University of North Carolina at Chapel Hill.