

## DIVISIONS

### Dynamical Astronomy

Marc Murison, Secretary

#### Highlights: Houston Meeting

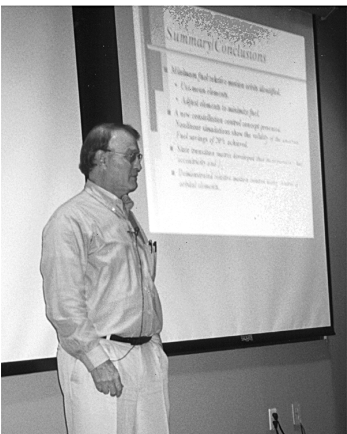
All photos by Alan Fiala, except as noted otherwise.



Joe Hahn, local host, signals the start of the meeting.



E. Myles Standish, Jr., recipient of the 2001 Dirk Brouwer Award, and his wife, Jeannine.



Terry Alfriend spoke on aspects of flying satellites in formation.

#### The 2001 Annual Meeting

The 2001 meeting, held at the Lunar and Planetary Institute in Houston on April 22-25, was organized by **Hal Levison** (Program Chair) and **Joe Hahn** (Local Host). The facilities were excellent, the support staff was very helpful, and the weather was mild with a little rain (and some exciting Houston lightening). The meeting program, prepared well in advance by Hal Levison and posted on our web site through Doug Mink's effort, was printed in a handsome booklet with an arresting image of Saturn's rings as cover art.

The 2001 Brouwer Award was formally presented to **E. Myles Standish, Jr.**, for the development of the JPL planetary ephemerides. His invited lecture at the meeting was an historical talk on one of Myles's favorite topics, "Galileo's Observations of Neptune," wherein he reconsidered Galileo's identification(s) of Neptune that appeared in his early sketches of the positions of Jupiter's satellites.

Invited papers at the 2001 meeting were presented on the dynamical stability of Upsilon Andromedae by **Pavel Artymowicz**, Stockholm; collisionless dark matter halos by **Edward Bertschinger**, MIT; extrasolar planet candidates by **Dave Black**, LPI; celestial mechanical effects on Europa's habitability by **Rick Greenberg**, U. Arizona; dynamics of interplanetary dust by **Keith Grogan**, Goddard; a dynamical systems approach to the circular restricted three-body problem with applications to lunar

transfer orbits and cometary transport by **W. S. Koon**, Caltech; and planetary rings by **Phil Nicholson**, Cornell. **John Connolly**, an engineer with the Exploration office of Johnson Space Center, presented an enthusiastic talk, "Leaving the Cradle," after the banquet.

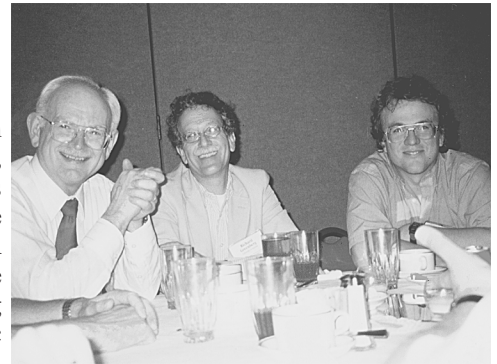


John Connolly, JSC, (right) entertained guests at the banquet with a talk entitled "Leaving the Cradle," or, space exploration beyond the International Space Station. Fritz Benedict, left, discusses it afterwards.

#### DDA Student Stipend Program

For the seventh consecutive year, two student stipends were awarded at the annual DDA meeting. The outstanding recipients were **Eric Barnes** (LSU), who spoke on "Characterizing 3D Stellar Orbits with Correlation Integrals," and from Cornell **Britt Scharringhausen**, whose topic was "Adaptive Optics Observations of Saturn's Inner Moons." They each presented their first papers at our annual meeting.

To increase student participation at DDA meetings, the Division makes available up to two student stipends of \$400 each. Any full or part-time student presently enrolled in an academic program at a college or university is eligible and encouraged to apply. For next year's April 2002 meeting, submit an abstract of a paper for presentation, along with an advisor's recommendation, to Dr. **Jane Russell**, NASA's GSFC, Code 664, Greenbelt, MD 20771, [jussell@lheamail.gsfc.nasa.gov](mailto:jussell@lheamail.gsfc.nasa.gov).



(From the left) Bill van Altena, Bob Greenberg, and Doug Hamilton enjoy the banquet.



From LSU: Eric Barnes, Student Stipend Awardee, and Joel Tohline, his advisor.



From Cornell University: (From the left) Joe Burns, Division Chair; Britt Scharringhausen, Student Stipend Awardee; Phil Nicholson, her advisor and invited speaker.



Those who keep the Division running: (From the left) Peter Shelus, Treasurer; Hal Levison, Chair; and Marc Murison, Secretary. Not pictured: Dave Merritt, Vice Chair.

## Nominate for 2003 Brouwer Award

The Brouwer Award Selection Committee of the DDA invites nominations from any member of the AAS for an award competition. The Brouwer Award was established to recognize outstanding contributions to

the field of dynamical astronomy, including celestial mechanics, astrometry, stellar systems, galactic and extragalactic dynamics. Complete information regarding the Brouwer Award can be found at the DDA web site <http://dda.harvard.edu> or by contacting the Committee Chair, Dr. William F. Van Altena, Dept. of Astronomy, Yale University, PO Box 208101, New Haven, CT 06520-8101, [vanalten@astro.yale.edu](mailto:vanalten@astro.yale.edu). Nominations must be received by **31 December 2001**.

## Future DDA Meetings

The next DDA meeting will be held at the Timberline Lodge near Portland, Oregon, **21–24 April 2002**. The local host will be Alan Harris of JPL, and the program committee will consist of Harris, David Merritt (Vice Chair), and Marc Murison (Secretary). The 2003 meeting is scheduled for May 5-8 at Cornell University with Joe Burns as local host. The DDA is considering holding its 2004 meeting abroad, perhaps in Brazil.

## Officers and Membership

The officers elected for 2001-2002, Committee members elected for 2001-2003, and continuing Committee members, are *Chair*: Hal Levison (SwRI); *Vice Chair*: David Merritt (Rutgers); *Past Chair*: Joe Burns (Cornell); *Secretary*: Marc Murison (USNO); and *Treasurer*: Pete Shelus (U. Texas at Austin). Committee members are: *First Year*: Robin Canup (SwRI); Phil Nicholson (Cornell); Tom Statler (Ohio U.); *Second Year*: Jane Morrison (STScI); Judit Ries (U. Texas at Austin); and Steve Unwin (JPL).

The Division has continued to grow, reaching 216 regular members and 39 affiliates for a total membership of 255, up 10% from last year and over 30% from 1998.

We are saddened that three members (James H. Bartlett, Samuel J. Goldstein and Joseph W. Siry) passed away.



Almost the whole DDA meeting.

## Wisdom To Receive The 2002 Brouwer

The 2002 Brouwer Award was given to **Jack Wisdom**, Professor of Planetary Science at MIT. The citation reads as follows:

“Jack Wisdom (Massachusetts Institute of Technology) pioneered the application of modern nonlinear dynamics and the theory of Hamiltonian chaos in the field of solar system dynamics. As a graduate student, he was the first to apply the resonance overlap criterion

to this field, demonstrating that the band of chaotic, short-lived orbits near a perturbing body results from the overlap of mean motion resonances. He subsequently solved the long-standing problem of the origin of the Kirkwood gaps. After developing an algebraic mapping to permit rapid numerical integration of trajectories near the 3/1 Kirkwood gap, Jack showed that chaotic orbits in this gap undergo intermittent jumps in eccentricity that lead to planet-crossing orbits. This not only provides a means of clearing the gap but also demonstrates a means of delivering meteoritic material to the Earth. The boundary of the numerically determined 3/1 chaotic zone corresponds to the observed boundary of the 3/1 Kirkwood gap, giving the first clear evidence of a physical manifestation of dynamical chaos in our solar system.

“Through continued, careful investigations, Jack has illustrated the ubiquitous role that dynamical chaos plays in the evolution of our solar system. Through Jack’s efforts, we now know that the Saturnian moon Hyperion tumbles chaotically, and that every satellite passes through a period of chaotic rotation as it tidally evolves toward synchronous rotation. We also know, from his work with student Jihad Touma, that the obliquity of Mars varies chaotically, a result with profound implications for the climate of that planet. In addition, Jack and his student, William Tittmore, demonstrated that the anomalously high inclination of Miranda resulted from a temporary capture in the 3/1 resonance with Umbriel. Through long-term numerical integrations on a special-purpose computer, Jack and colleague Gerald Sussman shattered the long-held view of the clockwork motion of the planets by revealing the chaotic evolution of Pluto’s orbit. They

went on to confirm the chaotic evolution of the outer planets and the full solar system. Most recently, Jack’s work with Touma has provided new insights into the complex evolution of the Moon’s orbit. Throughout his career, Jack has developed numerous analytical and numerical techniques upon which our community has relied and built. A notable example is the symplectic map for the n-body problem, a technique that now forms the core of nearly every solar system dynamics integration scheme in use today. For his fundamental contributions and leadership in the field, we find Jack Wisdom an outstanding candidate for the Brouwer Award.”



The Division announced that Jack Wisdom of MIT is the 2002 Dirk Brouwer Award winner

Photo by Debra Rueb, LPI.

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