

## The Institute Fellowship Program

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With the cooperation of the *HST* Project Office at Goddard Space Flight Center, the Institute created a Postdoctoral Fellowship Program in the mid-1980s in order to enhance the

research atmosphere and boost science staff morale after the Challenger disaster led to additional delays in launching *HST*. This program, and later its Hubble Fellow analog, stimulated the careers of some of the best young people in the field and created a pool of highly-qualified astronomers from which the Institute has greatly benefited in recruiting personnel.

In the wake of the round of budget-cutting which culminated in the staff reductions of July 1994, the IF program was discontinued in order to maintain operational capabilities. The last IF was Mark Dickinson, who has recently gone on to a Davis Fellowship at JHU.

The demise of the IF program has been lamented by many members of the science staff, and a proposal to recreate this program using internal research funds was adopted last year. The purpose remained much the same as before, namely, to offer the opportunity for exceptionally-gifted young researchers to devote their full energies to astronomy and astrophysics in the stimulating environment at STScI. Patterned after the highly-successful Hubble Fellow program, Institute Fellows have complete freedom to carry out a research program unencumbered by other functional duties for up to three years and, in addition, have at their disposal an annual research budget for travel,

publications, and equipment expenses.

An announcement for the first Institute Fellowship was placed in *Physics Today* and in the AAS job register in the fall of 1996. This generated 220 applications, even exceeding the number of applicants for the Hubble Fellows Program of that year. This demonstrates not only that we have struck the right chord in creating this Fellowship, but also confirms that the Institute is widely considered to be one of the most stimulating environments to pursue an astronomical research career. After a rigorous selection process, Roeland van der Marel was picked to be the first STScI Fellow.

Roeland received undergraduate degrees in astronomy and mathematics from Leiden University in the Netherlands. He continued his PhD studies at the same institution, under the supervision of Professors Tim de Zeeuw and Marijn Franx. With them and several other collaborators, including James Binney, Roger Davies, Simon White and Hans-Walter Rix, he worked on a variety of topics related to the dynamics of galaxies. In 1994 this resulted in a thesis "Velocity Profiles and Dynamical Modeling of Galaxies," for which the University awarded him its annual C.J. Kok Prize. The main emphasis in Roeland's work was on the properties of the nuclei of galaxies, and on the possible presence and prevalence of black holes. Among other things, the ground-based observations of M87 in his thesis revealed rapid gas motions in the nucleus that could be ascribed to the gravitational influence of a black hole; this was subsequently confirmed by *HST* through the detection of the well-known gas disk.

After his thesis, Roeland accepted a Hubble Fellowship at the Institute for Advanced Study in Princeton to work on his proposed research project "Black Holes in Galactic Nuclei," under the supervision of Professor John Bahcall. He obtained observa-

tions with the *HST*/FOS of various galaxies, and paid special attention to the case of M32. His observations of this galaxy provide the highest spatial resolution stellar-kinematical measurements obtained to date with the *HST*. Interpretation with state-of-the-art dynamical models shows that there must be a three-million-solar-mass dark object in the center of M32, contained within the central 0.3 parsec. The implied density leaves few other options except to infer that the object must be a black hole. The stellar motions in the nucleus of M32 are nicely illustrated by an animation that Roeland made on the basis of N-body simulations done on the Cray T3D of the Pittsburgh Supercomputing Center. This animation is available from <http://opposite.stsci.edu/pubinfo/mpeg/m32anim.mpg> or from Roeland's home page, <http://sol.stsci.edu/~marel> which also describes his research interests in more detail.

At STScI, Roeland will continue his research on the structure and dynamics of galaxies. Among other things, he will use NICMOS in Cycle 7 to study the structure, density and brightness of a sample of merger-remnants. He is also involved in studies of the gas disks in NGC 7052 and IC 1459, in a study of the ultraluminous IRAS galaxy NGC 6240, and in a ground-based study of the dynamics of the stars in the nucleus of the dense globular cluster M15. Future plans include the construction of dynamical models to better interpret the ongoing microlensing observations towards the LMC, and observations and modeling of lensed quasars to study the structure of dark halos of intermediate redshift galaxies.

We have just advertised for the second Institute Fellowship; a copy of the advertisement is posted elsewhere in this Newsletter.



Roeland van der Marel