Bulletin of the AAS • Vol. 53, Issue 2

Reginald Dufour (1948–2021)

Christopher Johns-Krull¹

¹Rice University

Published on: Dec 14, 2021

DOI: 10.3847/25c2cfef.14e95f4d

License: [Creative Commons Attribution 4.0 International License \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/)

Dr. Reginald “Reggie” Dufour, 72, passed away of natural causes on the evening of Monday, April 26, 2021 in his home in Bandon, Oregon.

Reggie was born on July 29, 1948 in Marksville, Louisiana. One time as a child, he spent the night hiding on the roof to avoid facing trouble. He fell in love with the stars and decided right then he wanted to pursue astronomy. Reggie went on to win several major science fairs with his photographs of the Moon and other space objects. Dufour studied astronomy in college, earning his Bachelors at Louisiana State University. He then moved to the University of Wisconsin for his graduate studies, earning a M.S. en route to his Ph.D. in 1974. Reggie’s thesis, “The Chemical Composition of Selected HII Regions in the Magellanic Clouds,” was done under the direction Prof. John S. Mathis.

Photo credit: Woodson Research Center, Rice University

After completing his Ph.D., Reggie spent two years as a National Research Council Postdoctoral Associate at the NASA Johnson Space Center. He then moved to Rice University in Houston, TX where he spent over 40 years, a much beloved teacher, researcher and a professor, first in the Department of Space Physics and Astronomy, then in the Department of Physics and Astronomy. His research interests were in the areas of observational astrophysics related to gaseous nebulae and star-forming galaxies. His studies involved imaging and spectroscopic observations in the ultraviolet, optical, and near-infrared spectral regions using a variety of ground-based and space-borne telescopes. Reggie was a guest observer with the IUE satellite for 12 years beginning in 1980, a general observer with the HST since 1990, and a guest investigator with the FUSE satellite starting in 2001.

Dufour in his early years, measuring a photographic plate. *Photo credit: Rice University*

Reggie was the co-author of almost 90 refereed publications. While he worked on many topics, one for which he will be most remembered is his development of software tools for the analysis of nebular spectra, used to determine the physical conditions of the gas. The software tools were incorporated into the IRAF/STSDAS environment for easy use by astronomers the world over. The paper describing the software [\[1\]](#) and the

paper describing the five-level atomic model on which the software is based [2] have over 550 citations alone, and the software remains in regular use by astronomers today.

The models he constructed allowed Reggie and many others to study nebular abundances, and he was a recognized leader in this field. One of his most cited papers is an early (1984) review of the state of knowledge of the composition of HII regions in the Magellanic Clouds [3]. Reggie was an early user of HST, producing many significant results in the 1990s. One, in particular, was an analysis of the dwarf irregular galaxy I Zwicky 18, in which he and his colleagues found a significantly higher carbon abundance than expected. These results also provided important tests of galaxy formation scenarios in a cold dark matter dominated universe. Some models predicted very young dwarf galaxies and I Zwicky 18 was thought to be an example. Reggie and his collaborators' work was critical to showing this galaxy was not the young primeval galaxy many thought it to be.

Reggie will be remembered as a wonderful colleague and a loving friend. He mentored and supported both professional and amateur astronomers. As an observational astronomer from the 1970's, Reggie was an expert in acquiring and analyzing both spectra and images using photographic plates. He leaves an extensive archive of plates now being managed at Rice. As the technology evolved, Reggie was among the astronomers who used the first CCDs, and he embraced the first space-based observations with enthusiasm while imparting his extensive expertise with ground-based telescopes and his knowledge and love of the sky to the next generation of astronomers. Reggie supervised 10 Ph.D. theses of Rice students and taught and mentored countless undergraduate students. Reggie also had a love for outreach and interacted a great deal with all the Houston area amateur astronomy societies. He cherished these interactions, and the amateur astronomers cherished them as well — so much so that some, upon discovering a minor planet, named it after him (33994 Regidufour, discovered on July 26, 2000).

Reggie officially retired in 2015, transitioning to emeritus status. He remained in Houston for a few years, then moved to the Oregon home he had always planned to retire to. Reggie was very fond of animals. He always had two or three small dogs that he brought with him almost everywhere. He also had a passion for raising orchids. He grew them at both his Houston and Oregon homes. He was even able to get blooms from some rare and hard to grow varieties.

Reggie is survived by cousins as well as many, many friends, students, and colleagues who will miss him dearly.

Citations

1. Shaw, Richard A., & Dufour, Reginald J. (1995). Software for the Analysis of Emission Line Nebulae. *Publications of the Astronomical Society of the Pacific*, 107, 896. <https://doi.org/10.1086/133637> ↵
2. De Robertis, M. M., Dufour, R. J., & Hunt, R. W. (1987). A five-level program for ions of astrophysical interest. *Journal of the Royal Astronomical Society of Canada*, 81, 195-220. ↵
3. Dufour, R. J. (1984). The composition of H II regions in the Magellanic Clouds. In van den Bergh, S. & de Boer, K. S. D. (Eds.), *Structure and Evolution of the Magellanic Clouds* (Vol. 108, pp. 353-361). <https://doi.org/10.1017/S0074180900040481> ↵