Xu-Dong As A Mathematician

10/25/2005

Xu-Dong remembered as a mathematician by his mentors, collaborators and friends.

- **Stanley Osher** (UCLA): Xudong's Ph.D advisor, NAS member.

  "The mathematical community suffered a huge loss with the untimely passing of Xudong Liu. Our world is colder and darker today with the absence of one of its most lovable and talented members.However, his work on WENO, central and positive schemes and on interface problems will live on. His unique positive and charming personality will also live on. We will always miss him.

  Xudong Liu made many contributions to scientific computation and other areas of applied mathematics. He will always be remembered for his 1994 paper in which the notion of weighted essentially non-oscillatory schemes was introduced. This paper has 227 links on Google and there are almost 600 links to "weighted essentially .." This idea allows one to improve the performance of essentially non-oscillatory schemes for shock capturing dramatically. WENO schemes are the method of choice for many researchers in a wide variety of areas. In addition, he made state-of-the-art contributions to: positive schemes, central schemes, and introduced convex ENO methods. These are all part of many users' toolbox. He also helped develop the ghost fluid method, extending it to viscous flows. This is also widely used, e.g., in computer graphics. His work was not only innovative, but also rigorous. He has some very nice papers involving rates of convergence for these and related methods. He was also a fine educator, turning out excellent Phd students. He was a leader in his field and now he is the WENO angel."

- **Peter Lax** (Courant Institute, NYU): Xudong's postdoc mentor and collaborator. member of NAS, American Philosophical Society. Receipient of Abel Prize, Wolf Prize, National Medal of Science.

  "I am very sad and downcast to learn the inevitable.The death of a young man,with family, and so much to look forward to, is a tragedy very hard to bear.

  I had a very fruitful of collaboration with Xudong; he was very imaginative,and once he had an idea he did not hestate to carry it out. I admired

him; what a loss to the scientific computing community, and an equal loss to his friends."

- Condolences from: Weinan E (Princeton Univ.), Ronald Fedkiw (Stanford Univ.), Smadar Karni (Univ. of Michigan), Doron Levy (Stanford Univ.), Jian-Guo Liu (Univ. of Maryland), Chi-Wang Shu (Brown Univ.), Eitan Tadmor (Univ. of Maryland), Tao Tang (HK Baptist University), Weiping Zhang (Director of the Math Institute at Nankai, China).

Condolences from other organizations:

- Chinese Consulate General in Los Angeles.

- Fudan Alumni Association in Southern California

  Please allow me, on behalf of the Fudan Alumni Association in Southern California, to express our profound sympathy and sincere condolences to you and your family for the loss of Prof. Xu-Dong Liu.

  Prof. Liu graduated from Fudan University in Applied Mathematics in 1984. He was one of the very successful overseas Chinese and he was always proud to be an alumnus of Fudan. It seems unfair that he was taken away from us so soon.

  Prof. Liu was a loving, optimistic, hard working, and caring person. He is loved by his friends and colleagues in many US States, mainland China, and Taiwan.

  Prof. Liu has set an outstanding model for our Fudan Alumni, with his significant contributions in the area of Fluid Dynamics and Applied Mathematics, his great effort in student education and his brave fighting against the disease.

  We want you to know that we are here with you and your family. It is important to keep the faith and move on with your life. It is now your turn to carry the torch and make Prof. Liu proud. We are confident that you can do it and we'll always be there to support you.

  In the hearts of all who knew Prof. Liu, his memory lives.

- Institute of Applied Physics and Computational Mathematics, Beijing, China.