THE UNIVERSITY OF MICHIGAN

Regents Communication

ACTION REQUEST

Subject: **Report of Faculty Retirement**

Action Requested: **Adoption of Retirement Memoir**

Smadar Karni, Ph.D., professor of mathematics in the College of Literature, Science, and the Arts, retired from active faculty status on December 31, 2024.

After receiving a B.Sc. in mathematics and physics from Hebrew University, Professor Karni earned her M.Sc. in applied mathematics from Tel Aviv University. She received a Ph.D. in aerospace engineering in 1990 from Cranfield Institute of Technology under the supervision of Philip Roe. Professor Karni held a postdoctoral assistant professorship at UM, and an NSF postdoctoral fellowship at NYU Courant Institute. She held positions at Temple University before returning to UM in 1997 as associate professor, being promoted to professor in 2003.

Professor Karni's research is in applied mathematics and numerical analysis, specifically numerical methods for partial differential equations, computational fluid dynamics, and nonlinear hyperbolic conservation laws. The systems of equations are characterized by the propagation of waves, and are dominated by the formation of shock waves and by rich and complex nonlinear wave interactions. Her publications include significant articles with leading numerical analysts on a range of topics including nonreflecting boundary conditions, nonconservative hyperbolic systems, compressible multifluids, slowly moving shocks, interface tracking, shock-interface interactions and adaptive algorithms. Application areas are wide ranging and include compressible gas dynamics, astrophysical flows, shallow water systems in environmental flows, water waves, and more recently systems of partial differential equations modeling traffic flows and their simulations.

Professor Karni advised eight graduate students, served on many Ph.D. dissertation committees in mathematics and engineering, plus mentored several young faculty and postdoctoral researchers. Recognized as an excellent teacher, her courses focused on applied mathematics, including numerical methods and analysis, differential equations, and scientific computing. She actively encouraged participation of women in applied mathematics, and was a four time recipient of the Crosby Research Award from the National Science Foundation for advancement of women in science and engineering. During her time at UM, she served on several committees in the department and college, and at the university level.

The Regents now salute this distinguished scholar by naming **Smadar Karni, professor emerita of mathematics.**

Requested by:

Jon Kinsey
Vice President and Secretary of the University   **December 2024**