Abstract: Perturbation methods (asymptotic expansions) are useful in constructing physical theories as well as simplifying specific problems. A series of problems will be presented to illustrate perturbation techniques. Both regular and singular perturbations will be covered. An extensive discussion of the matching behavior of asymptotic expansions will be given. A final example will show the use of composite expansions to analyze turbulent flow experiments.

After receiving a BA degree in Mathematics and a BS degree in Mechanical Engineering from Wichita State University in 1956, Dr. Panton practiced five years in industry. His first employment was at North American Aviation followed by a period of active duty with the Air Force where he was assigned to the X-15 Research Plane project at Wright-Patterson AFB. Subsequently, he studied Mechanical Engineering at the University of Wisconsin (Madison), M.S.-1962, and the University of California (Berkeley), Ph.D.-1966. Following graduation he was a professor at Oklahoma State University, 1966-71, and then the University of Texas at Austin, 1971-present. Currently he holds the J. H. Herring Centennial Professorship. His research interests are in fluid flow. Work in turbulent flows has centered on scaling laws for wall layers and the statistic of the wall-pressure fluctuations. He is a member of the ASME Fluid Mechanics Committee and served a term on the AIAA Fluid Dynamics Technical Committees and the publications committee of the American Physical Society. Dr. Panton served a term as associate editor of the Journal of Fluids Engineering. In 1991 a French fellowship allowed him complete a sabbatical at Ecole Centrale de Lyon. He was designated as a NATO-AGARD lecturer in 1994, and in 1998 a visiting scholar at Ecole Centrale de Lille. Dr. Panton authored the graduate textbook "Incompressible Flow," J. Wiley and Sons Inc., in 1984, a second edition in 1996, and a third edition is in progress. In 1997, he edited a monograph entitled "Self-Sustaining Mechanisms of Wall Turbulence."

Friday, April 5, 2002
2:00 PM in 123 Wallace Hall

Please come join us for refreshments before the lecture at 1:30 p.m. in the Hedrick Conference room of the NIAR.