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Biographic Sketch, Expertise, Activities et cetera

1. Biographical sketch

1934	Born in Neuhaus, Kr. Lüneburg, Germany.
1957 to 1958	Study of "Light-Weight Engineering" at the Staatliche Ingenieurschule Aachen, Germany, Dipl.-Ing. (FH).
1958 to 1963	Study of "Mechanical Engineering" with emphasis on aeronautics at the Rheinisch Westfälische Technische Hochschule (Technical University) Aachen (RWTH Aachen), Germany, Dipl.-Ing.
1963 to 1973	Research work at the Institute for Applied Gasdynamics of the Deutsche Versuchsanstalt für Luftfahrt (DVL), Köln-Porz, Germany.
1966 to 1967	NASA University Fellowship at the University of Alabama, Huntsville, Alabama, USA.
1970	Dr.-Ing. (Ph.D.) at the RWTH Aachen.
1973 to 1979	Head of "Theory and Numerics" at the Institute for Applied Gasdynamics of the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt (DFVLR), Köln-Porz, Germany.
1975	Inauguration (Dr.-Ing. habil) for Theoretical Fluid Mechanics at the RWTH Aachen, Germany.
1980 to 1988	Development Engineer at Messerschmitt-Bölkow-Blohm GmbH (MBB, now Airbus Group), Military Aircraft, Ottobrunn, Germany.
1988 to 1990	Head of "Theoretical Aerodynamics" at MBB Militärflugzeuge, Ottobrunn.
1990 to 1994	Manager "Technology Air Vehicle Engineering" at Dasa, Ottobrunn.
1995 to 1999	Member of the manager group of Dasa Military Aircraft, Ottobrunn.
1998 to 1999	Chief Engineer Aerodynamics at Dasa Military Aircraft, Ottobrunn.
1999	Retired from Dasa Military Aircraft.
Since 1999	Consultant Aerospace Technologies (Dasa/EADS Military Aircraft, ESA/ESTEC, DLR).

2. Technical and scientific expertise

- Fluid mechanics,
- Aerodynamics,
- Gasdynamics,
- Aerothermodynamics,
- Propulsion integration,
- Transition and turbulence,
- Viscous and vortical flows,
- Interdisciplinary aircraft-design problems,
- Signature problems,
- Discrete numerical methods,
- Experimental-vehicle conception,
- Flight-vehicle shaping,
- Process conception,
- Project conception and management.

3. Project management

1984 to 1986	Initiator and coordinator of the technology programme "Numerical Aerodynamics at MBB".
1986 to 1987	Manager of the study group "Aerothermodynamics" of the study "Definition of Key Technologies as Starting-Points for the German Industry for the Development of Future Supersonic Transport Aircraft with Special Regard to Possible Hypersonic Aircraft Projects" of the German Ministry of Research and Technology (BMFT).
1988 to 1991	Technical manager of the project "Alternate Aerothermodynamics in the HERMES Project" and the utilization study for the experimental vehicle MAJA.
1988 to 1995	Technical manager (representative of Dasa Military Aircraft as lead company) of the area "Aerothermodynamics and Propulsion Integration" in the German Hypersonics Technology Programme and member of the Steering Committee.
1992 to 1995	Manager of the study "Technology Development and Verification Concept" of the German Hypersonics Technology Programme.
1995 to 1998	Manager of the study "Technology Development and Verification Plan" of the Future European Space Transportation Investigations Programme (FESTIP) of the European Space Agency (ESA).
1995 to 1999	Technical manager of the technology study "Aerothermodynamics" in FESTIP.
1996 to 1997	Manager of the study "High-Performance Computation in Aircraft Industry and Research" of the German Ministry of Education and Research (BMBF). In the aftermath development of the concept "Virtual Product" (1999/2000).

4. Reviews and consultations

1972 to 1976	Consultant of the AGARD Subcommittee on Windtunnel Testing Techniques.
• Reviewer for the Deutsche Forschungsgemeinschaft (German Research Council, DFG):	
1989 to 1998	Collaborative Research Centre "Basics of the Design of Space-Transport Systems (SFB253)", RWTH Aachen.
1989 to 1995	Priority Programme "Boundary Element Methods (SPP454)".
1995 to 2003	Priority Programme "Transition (SPP1017)".
1998 to 2001	Collaborative Research Centre "Influencing Complex Turbulent Shear Flows (SFB1664)", Technical University Berlin.
Since 1992	Several Individual DFG Research Grants.
Since 1979	Reviewer for National Research Council (USA), Volkswagenwerk Foundation, European Union (Brite Euram, ISTC), Hermann von Helmholtz-Society of German Research Centers, German Science Council.
1993 to 1999	Reviewer of performance of several institutes of the Deutsches Zentrum für Luft- und Raumfahrt (DLR).
1993	Chairman of the SCIROCCO Advisory Group of the European Space Agency (ESA).
Since 1995	Consultant and reviewer in the German Aeronautical Research and Technology Programme (Deutsches Luftfahrtforschungsprogramm).
1999 to 2002	Member of the Advisory Committee (AC1) of the European Transonic Windtunnel (ETW) as representative of Dasa Military Aircraft.
2000 to 2004	Member of the Advisory Committee of the Competence Network for Technical and Scientific High and Highest Performance Computation in Bavaria (KONWIHR).
2008 to 2020	Member of the scientific advisory board of the Collaborative Research Center

SFB TR40 "Technological Foundations for the Design of Thermally and Mechanically Highly Loaded Components of Future Space Transportation Systems".

5. Membership in professional societies and committees

Since 1968	Member of the American Institute of Aeronautics and Astronautics (AIAA).
1968 to 2018	Member of the German Society for Applied Mathematics and Mechanics (GAMM).
1971 to 1974	Member and Chairman (since 1972) of the Working Group for Numerical Methods in Fluid Mechanics.
1974 to 1984	Member and Chairman (1974 to 1977) of the GAMM-Committee for Numerical Fluid Mechanics.
1974 to 1980	German representative in the European Research Programme on Viscous Flows (EU-ROVISC).
1977 to 2002	Member of the German Society for Aeronautics and Astronautics (DGLR).
1982 to 1984	Member of the Advisory Board of the DGLR.
1979 to 1999	Chairman of the project group "Hypersonics" and member of the programme committee of the German Working Group "Flows with Separation (STAB)".
1985 to 1988	Member of the AGARD Fluid Dynamics Panel (FDP) Working Group (WG 10) "Calculation of 3D Separated Turbulent Flows in the Boundary Layer Limit".
1990 to 1994	Member of the AGARD FDP WG14 "Selection of Experimental Test Cases for the Validation of CFD Codes".
1990 to 1998	Coordinator of the Pilot Center Germany South of the European Research Community on Flow, Turbulence and Combustion (ERCOFTAC).
1995 to 1998	Member of the AIAA Technical Committee "Applied Aerodynamics".
2004 to 2024	Member of the Aeronautical Seniors München (ASM).
2009 to 2020	Corresponding member of the European Air and Space Academy (AAE) at Toulouse, France.
2011 to 2025	Member of the Royal Aeronautical Society (RAeS Munich Branch).
2012	Member of the ASM task group and editor of the ASM memorandum "Long-Term Development of the Field of Aeronautics - Economy and Ecology in Harmony".
2019/2020	Member of the AAE task group for the draft and issue of the memorandum "Preparing for 'Green Aviation' while Preserving Commercial Transport Aircraft Development Know-How in Europe".

6. Teaching and research activities

1975 to 1982	Lecturer for "Theoretical Fluid Mechanics" and professor extraordinarius (since 1980) at the Rheinische Westfälische Technische Hochschule (RWTH) Aachen. Member of the Faculty of Mechanical Engineering.
1982 to 1991	Lecturer for "Theoretical Fluid Mechanics" and professor extraordinarius at the Technische Universität München. Member of the Faculty of Mechanical Engineering.
Since 1992	Lecturer for "Theoretical Fluid Mechanics" and professor extraordinarius at the Universität Stuttgart. Member of the Faculty of Aerospace and Geodetic Sciences.
Since 1975	Teaching topics: laminar-turbulent transition, three-dimensional boundary layers, separated flows, aerothermodynamic design problems of hypersonic flight vehicles.
Since 1975	Research projects sponsored by the Deutsche Forschungsgemeinschaft (DFG) in one collaborative center of excellence (SFB83, "Fluid Mechanics and Thermo Gasdynamics" at the RWTH Aachen), in several priority programmes, and in the individual grants programme.

Since 1975	Principal adviser of 21 doctoral theses in the fields of viscous flows, flow-physics modelling (transition, turbulence, separation), aerothermodynamics, discrete numerical methods of fluid mechanics/aerodynamics, grid generation.
1975	Lecturer at the Lecture Series 74 "Introduction to Computational Fluid Mechanics" of the von Kármán Institute (VKI), Brussels, Belgium.
Since 1985	Member of national and international PhD committees.
1986	Lecturer at the AGARD-FDP-VKI Special Course "Computation of Three-Dimensional Boundary Layers including Separation", Brussels.
1987	Lectures on "Numerical Methods in Fluid Mechanics" during an AGARD Consulting Mission to the Technical University of Athens, Greece.
1996	Director (and lecturer) of the AGARD-FDP-VKI Special Course "Aerothermodynamics and Propulsion Integration for Hypersonic Vehicles", Brussels.
2000	Visiting professor at the Aerospace Department of the Politecnico Torino, Italy.
2004	Lecturer at the RTO/AVT/VKI Lecture Series (AVT-116) "Critical Technologies for Hypersonic Vehicle Development".
2014	Lecturer at the RTO/AVT/VKI Lecture Series (STO-AVT-234-VKI) "Hypersonic Flight Testing", General Introduction and Conclusion.

7. Publication activities

Since 1966	<ul style="list-style-type: none"> - 115 journal and conference publications, - 58 research and development reports, - 8 book publications, - 26 contributions to courses and seminars, - 24 editions of proceedings, work reports and so on.
1977 to 1996	Member of the editorial advisory board and reviewer of the "Zeitschrift für Flugwissenschaften und Weltraumforschung (ZFW)".
1984 to 2009	General editor of the "Notes on Numerical Fluid Mechanics" of the Vieweg-Verlag, Braunschweig/Wiesbaden, Germany, since 2001 of the Springer Verlag, Heidelberg, Germany, since 2002 "Notes on Numerical Fluid Mechanics and Multidisciplinary Design".
Since 1992	Member of the editorial board and reviewer of the "International Journal of Computational Fluid Dynamics (IJCFD)".
Since 1992	Reviews for several journals of the American Institute of Aeronautics and Astronautics (AIAA).
1998 to 1999	Advisory Editor of the International Journal "Flow, Turbulence and Combustion".
Since 1997	Reviewer for the journal "Aerospace Science and Technology (formerly ZFW)".
Since 2011	Reviewer for the CEAS Space Journal.

Selected book publications:

E.H. Hirschel, W. Kordulla: "Shear Flow in Surface-Oriented Coordinates".

Vieweg Verlag, Braunschweig/Wiesbaden, Notes on Numerical Fluid Mechanics, Vol. 4, 1981.

Also in Russian translation.

A. Eberle, A. Rizzi, E.H. Hirschel: "Numerical Solutions of the Euler Equations for Steady Flow Problems". Vieweg Verlag, Braunschweig/Wiesbaden, Notes on Numerical Fluid Mechanics, Vol. 34, 1992.

E.H. Hirschel, H. Prem, G. Madelung (editors): „Luftfahrtforschung in Deutschland“. Vol. 30 of the Book series „Die Deutsche Luftfahrt“. Bernard & Graefe Verlag, Bonn, 2001.

E.H. Hirschel, H. Prem, G. Madelung (editors): „Aeronautical Research in Germany – from Lilienthal until Today“. Springer-Verlag, Berlin Heidelberg New York, 2004.

E.H. Hirschel: „Basics of Aerothermodynamics“. Springer-Verlag, Berlin/Heidelberg/New York, 2005, and Vol. 204, Progress in Astronautics and Aeronautics, AIAA, Reston, VA, 2005.

E.H. Hirschel, E. Krause (editors): „100 Volumes of ‘Notes on Numerical Fluid Mechanics’“. 40 Years of Numerical Fluid Mechanics and Aerodynamics in Retrospect. Volume 100 of Notes on Numerical Fluid Mechanics and Multidisciplinary Design. Springer-Verlag, Berlin Heidelberg, 2009.

E.H. Hirschel, C. Weiland: „Selected Aerothermodynamics Design Problems of Hypersonic Flight Vehicles“. Springer-Verlag, Berlin Heidelberg, 2009, and Vol. 229, Progress in Astronautics and Aeronautics, AIAA, Reston, VA, 2009. Also in Chinese translation.

E.H. Hirschel, J. Cousteix, W. Kordulla: „Three-Dimensional Attached Viscous Flow“. Basic Principles and Theoretical Foundations. Springer-Verlag, Berlin Heidelberg, 2014.

E.H. Hirschel: „Basics of Aerothermodynamics“, 2nd, revised edition. Springer-Verlag, Berlin Heidelberg, 2015.

E.H. Hirschel, A. Rizzi, C. Breitsamter, W. Staudacher: „Separated and Vortical Flow in Aircraft Wing Aerodynamics“. Basic Principles and Unit Problems. Springer-Verlag, Berlin, 2020. Also in Chinese translation.

E.H. Hirschel, W. Staudacher, M. Hornung, D. Kliche: „Elements of Hypersonic Airbreather Design and Development“. Springer-Verlag, Berlin, 2025.