



**Professor Wilfried B. Krätzig (1932-2017)** Wilfried B. Krätzig and Eugenio Oñate (Editors),  
Computational Mechanics of Nonlinear Response of Shells,  
Springer, 1990, 405 pages

See:

<http://www.kraetzigundpartner.de/41-rkraetzig.htm>

<http://www.kraetzigundpartner.de/91-rkraetzig.htm>

<http://www.barnesandnoble.com/c/w.-b.-kraetzig>

<http://www.amazon.com/gp/aw/s?i=stripbooks&field-author=W.%20B.%20Kratzig>

Prof. Dr.-Ing. Dr.-Ing. E.h. W. B. Krätzig  
Leiter des Lehrstuhls für Statik und Dynamik  
Konstruktiven Ingenieurbau  
Ruhr-Universität Bochum

### **Obituary by Reinhard Harte, Phillip L. Gould, John F. Abel:**

Wilfried B. Krätzig, one of the most innovative and inspiring contemporary engineers, passed away after a short period of illness on 7 March 2017 in his hometown Witten close to Bochum, Germany.

The IASS and the structural engineering community have lost a tireless leader and contributor to the field of shell structures. For forty-five years Wilfried Krätzig was an active member of IASS, especially in chairing the Working Group No. 3 on Cooling Towers from 1972–1995. During this time he organized two important International Symposia on Natural Draught Cooling Towers, 1984 in Bochum and 1996 in Kaiserslautern, the latter with Udo Wittek, his successor as Chair of IASS WG 3.

Wilfried Krätzig was born in Hamburg in 1932. After finishing his high school education, Wilfried studied Civil Engineering at the Technical University of Hannover. He graduated as a Dipl.-Ing. in 1957, and thereafter joined the construction office of the company ZÜBLIN. In 1962, he returned to the University of Hannover. Within 6 years, he finished both his Dr.-Ing. and his Habilitation in the concentration of shell structures under the supervision of Wolfgang Zerna, a Founding and Honorary Member of the IASS.

From 1969 until 1970, he was Visiting Associate Professor at the University of California in Berkeley, USA – at that time a hot-spot of shell theory and analysis. There he met famous shell researchers like Ray Clough and Paul Naghdi and IASS pioneers Alexander Scordelis and Egor Popov – and he gained his enthusiasm for thin shells and finite element methods.

In 1970, he was elected Chair Professor of the Institute for Statics and Dynamics at the newly founded Ruhr-Universität Bochum, where he worked productively until his retirement in 1998. During this time, he supervised

more than 60 dissertations and 7 habilitations as the primary mentor. Many of his students became professors at other universities. And Wilfried was successful in establishing two Collaborative Research Centers at the Ruhr-Universität, one on Structural Dynamics (1983–1995), the other on Damage Theories (1995–2007). Driven by Wilfried's strong but always inspiring personality, the success of both centers have helped establish the reputation of the Bochum group as a leading faculty for civil engineering.

To achieve this, numerous researchers from abroad visited the Institute. They were warmly welcomed by Wilfried, and became engaged in the current research of the Institute and in its social activities. Many of these colleagues became life-long friends.

Wilfried Krätzig's research work can be divided into four creative periods. The first period started with his engagement in shell theory and the finite element method, topics inspired by his stay in the US. His research on shell theories culminated in his derivation of thermodynamically consistent shell theories. This work inspired numerous followers to apply these theories for the evaluation of doubly-curved shell finite elements, and the treatment of nonlinearity, stability and dynamic behavior of thin-walled structures, especially the tallest thin concrete shells, natural draught cooling towers. He directly transferred his scientific results into practical application by chairing the VGB-Council for "Design and Construction of Cooling Towers" from 1972–1992 and simultaneously chairing IASS Working Group 3. Until the present, the resulting VGB-standard R 610e on "Structural Design of Cooling Towers" marks the state-of-the-art and thus is accepted worldwide.

In 1972, Wilfried was approved by governmental act to become a state-authorized checking engineer (Prüfingenieur). In 1983, together with three of his former PhD students, he established the consultancy Krätzig & Partners. Up to now, the firm has been engaged in more than 100 cooling tower projects in Europe, Asia, Africa, and the Middle East.

In his second research period, Wilfried intensified his focus on the dynamic behavior of structures by establishing the Collaborative Research Center SFB 151 on "Structural Behavior and Bearing Capacity of Structures under Dynamic Actions." The research projects especially dealt with wind- and earthquake-excitation on structures. Together with Hans-Jürgen Niemann, Wilfried established a boundary-layer wind tunnel at the Ruhr-Universität and with Phillip Gould, investigated the earthquake design of cooling towers. Further, he soon was aware of missing scientific knowledge on the durability and robustness of structures. The question was, how to design and construct buildings with respect to long-term reliability and sustainability. Thus in his third research period he established the Collaborative Research Center SFB 398 on "Life-time-oriented Design Concepts Considering Aspects of Damage and Deterioration."

After he retired from the university in 1998, he started his fourth research period. With great enthusiasm and precision, typical of all of his inquiries, he worked on the improvement of solar thermal updraft technology, which had been first promoted by IASS member Jörg Schlaich. Initially, he concentrated on the structural requirements of the extremely high updraft towers, but later he was engaged as well in the scientific description of the solar-driven thermodynamic updraft and the analysis of the resulting performance and its driving parameters needed to optimize the solar updraft technology.

All of these research accomplishments have been recognized and appreciated by the worldwide scientific community. Thus he received many honors, in 1987 the VGB Needle of Honor, 1991 the Carl-Friedrich-Gauss-Medal, 1994 the Max-Planck Research Prize by the German Government, 2000 the Werner-Heisenberg-Medal, and 2003 the VDI Medal of Honor. He was conferred Honorary Memberships of the IASS and of the European Association on Structural Dynamics. He was awarded two Honorary Doctoral Degrees, by the Bauhaus-Universität of Weimar and by the Technical University of Dresden. All these honors were capped by the highest honor an individual person can receive in Germany, the Order of Merit, conferred on 17 February 2016.

Most characteristic for Wilfried was his careful and precise approach in everything he was doing – in preparing his lectures, in deriving theories, in preparing manuscripts and in consulting his partners and engineers in the company. His well structured lectures and his clear handwriting and drawing on both sheets of paper and the blackboard are memorable among all his former students. His meticulous working style was clearly demonstrated by his handwritten notes, sketches and manuscripts. An example included here is among his last sketches and calculations to optimize solar updraft technology

In both scientific and professional networks Wilfried Krätzig was accepted as a Grandseigneur of German Structural Mechanics. IASS members will remember their colleague for his professionalism and integrity as well as for his competent and generous support. All will feel this great loss, and express our gratitude for his support, for his guidance, and for making the world a better place.

Our colleague and friend Wilfried Krätzig leaves behind his wife Karin, his children Dorte and Maren and his

grandchild Gerrit.

----- Reinhard Harte, Phillip L. Gould, John F. Abel

Beratender Ingenieur

**Tätigkeitsschwerpunkte:**

Tragwerksplanung von Sonderbauwerken (Schalenbauwerke, Brückenbauwerke, Kraftwerke)

Schadensgutachten

Restsicherheitsanalysen

Tragwerksdynamik, Nichtlineares Tragverhalten

Ingenieurwissenschaftliche Forschung

**Kurzbiographie:**

08.11.32 geb. in Hamburg

1952 - 1957 Studium des Bauingenieurwesens an der TU Hannover, Deutschland

1958 - 1962 Angestellter in der Ed. Züblin AG in Duisburg

1963 - 1968 wissenschaftlicher Mitarbeiter und Oberingenieur am Institut für Massivbau der TU Hannover

1965 Promotion

1968 Habilitation

1969 - 1970 Gastprofessor an der University of California in Berkeley

1970 - 1998 Professor für Konstruktiven Ingenieurbau an der Ruhr-Universität Bochum, Leiter des Lehrstuhls für Statik und Dynamik

1974 Prüflingenieur für Baustatik, Fachrichtungen Massivbau und Holzbau

Ab 1982 Sprecher des Sonderforschungsbereichs "Tragwerksdynamik"

1983 Gründungsgesellschafter der Krätzig & Partner GmbH

1989 C. F. Gauss Medaille der Braunschweigischen Wissenschaftlichen Gesellschaft

1994 Max Planck Forschungspreis der Bundesregierung

1994 Verleihung des Dr.-Ing. E.h. der TU Dresden

2003 Verleihung des Ehrenzeichens des Vereins Deutscher Ingenieure (VDI)

**Mitgliedschaften:**

Ingenieurkammer-Bau NRW, Mitglieds - Nr. 101533

Verband Beratender Ingenieure VBI

Vereinigung der Prüflingenieure VPI

Verein Deutscher Ingenieure VDI

Internationale Vereinigung für Brücken- und Hochbau IVBH

Deutscher Betonverein DBV

American Society for Civil Engineering ASCE

International Association for Shells and Spatial Structures IASS

International Association for Computational Mechanics IACM

Gesellschaft für angewandte Mathematik und Mechanik GAMM

sowie weitere Ingenieur-Fachvereinigungen

**Publikationen:**

<http://www.kraetzigundpartner.de/91-rkraetzig.htm>