

Eckart Matthias and Karl-Heinz Bennemann
zum 90. Geburtstag

EARLY DAYS AT THE PHYSICS DEPARTMENT

How the Physics Department at the F.U. Berlin re-invented itself in 1968—1972; and who ‘engineered’ that transition...

William D. Brewer, Prof. a.D., FB Physik, FU Berlin

Outline

- i. A Brief Pre-history of the Fachbereich Physik – Timeline
- ii. The ‘founding fathers’ of the modern FB Physik
 - Eckart Matthias
 - Karl-Heinz Bennemann

i. A *timeline* of the Physics Institutes/Department at the *Freie Universität Berlin*

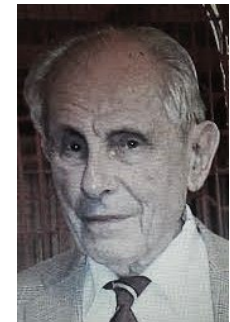
1949 – founding of the (I.)Physics Institute at the new *Freie Universität Berlin*, March 1949 by Prof. **Hans Lassen** (from the Humboldt Univ.). Later professor: *Gerhard Simonsohn*.



Above: the institute buildings at Boltzmannstr. 20;

Left: Profs. Lassen and Honerjäger, ca. 1955;

Right: *G. Simonsohn* († 29.05.2022)



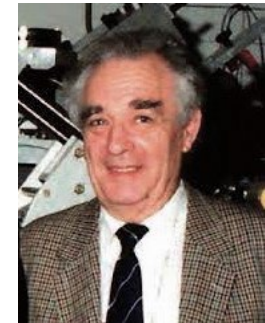
Theory: *Günther Ludwig* (from Göttingen), September 1949; later (1963): *Werner Theis*, *Fritz Penzlin* – subsequently *WE 4*. Later professors: *Hagen Kleinert*, *Bert Schroer*, *Bodo Hamprecht*, *Robert Schrader*, *Michael Karowski*, *Volkard Linke*



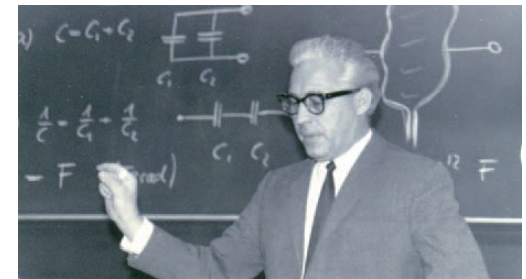
1954: A new institute: *II. Phys. Institut* (molecular spectroscopy), *Richard Honerjäger*, director. Later professors: *Thoms Törring*, *Johannes Hoefl*, *Klaus Möbius*, *Erwin Klein*.



1962: Nuclear physics (with *Hahn-Meitner-Institut*, HMI); *Karl-Heinz Lindenberger*, director. Later professors: *Jörg Eichler*, *Wolfram von Oertzen*.



1965: *III. Phys. Institut*, Nuclear resonance methods, *Siegfried Wilking*, director. Later professors: *Klaus Lüders*, *Klaus D. Kramer*.



1966: *Hans Lassen* retires as Prof. *emeritus*. A new institute director is sought.

- 1968-1972: 'The Great Renovation', transition to the *Fachbereich Physik*
- 1968: Appointment of **Stefan Hufner** and **Eckart Matthias** as professors and directors of the (new) *IV. Phys. Institut* and the *I. Phys. Institut*, respectively.



Hufner



Matthias



Bennemann (1970's)

Later professors from the Hufner and Matthias institutes included *Klaus Baberschke, Helmut Gabriel, Dieter Quitmann, Erwin Klein, William Brewer & Jürgen Bosse*; and, after Hufner moved to Saarbrücken in 1976, his successor *Günter Kaindl*, who came from Munich via Berkeley and Bochum.

- 1971: Appointment of **Karl-Heinz Bennemann** as professor and director of the (new) *WE 5: Condensed-matter Theory*. Later professors included *Klaus-Dieter Schotte, Herbert Stenschke, Wolfgang Helfrich, Frank Forstmann, & Ingo Peschel*.

The period from 1966, when Prof. Lassen retired, until 1968, when the first of the new positions was filled, was an *interregnum* for the physics institutes. Many of the members of the *I. Institut* left, there was a jam-up in teaching, and especially in finding places for *Diplom* candidates.

On the initiative of Profs. Lindenberger and Wilking, a *new institute* and a *general strengthening* of experimental physics were agreed on. *Eckart Matthias* (at the time at UC Berkeley) and *Stefan Hübner* (Bell Labs, Darmstadt) were chosen to head the renewed *I. Phys. Institut* and the newly-founded *IV. Phys. Institut*, resp. Hübner came to Berlin in August 1968 to set up his new activities, Matthias in April 1969. Both were confronted with a ‘wasteland’, in terms of equipment/space and of organization (the ‘Student Revolution’ was in full swing and there were many plans for renewal of the educational system).

Hübner and Matthias agreed that the theory department should also be augmented to include *condensed-matter theory*, resulting in the creation of further new professorships and a new institute. *Karl-Heinz Bennemann* (at the time in Rochester, NY) was chosen to be its director, and he was appointed in record time, so that he could begin his work in 1971.

June 1970 saw the entry of the new Berlin law governing the universities, which introduced a participatory structure and a modernized organization. This was the real beginning of the *Fachbereich Physik*. The changes mandated by the law were completed by March 1972.

[For more information, see <https://www.physik.fu-berlin.de/fachbereich/geschichte/index.html>]

ii. The ‘*founding fathers*’: Eckart Matthias and Karl-Heinz Bennemann

Brief biographies of Matthias and Bennemann:

Eckart Matthias was born on the 30th of September, 1932 in Quedlinburg. After moving to West Germany in the 1950’s, he studied physics at the University of Hamburg, obtaining his *Diplom* in 1959, working in the institute of Willibald Jeschke. He then went on to the University of Uppsala, Sweden, where he wrote his doctoral dissertation on theory and experiments with the then-new method of perturbed angular correlations (PAC) in the institute of Kai Siegbahn:

EXPERIMENTAL AND THEORETICAL
INVESTIGATIONS OF
PERTURBED ANGULAR CORRELATIONS

INAUGURAL DISSERTATION

BY

ECKART MATTHIAS

BY DUE PERMISSION OF THE FACULTY OF SCIENCE
OF THE UNIVERSITY OF UPPSALA,
TO BE PUBLICLY DISCUSSED IN THE LECTURE HALL OF
THE INSTITUTE OF PHYSICS
ON MAY 2, 1963, AT 10 A.M.
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

UPPSALA 1963
ALMQVIST & WIKSELLS BOKTRYCKERI AB

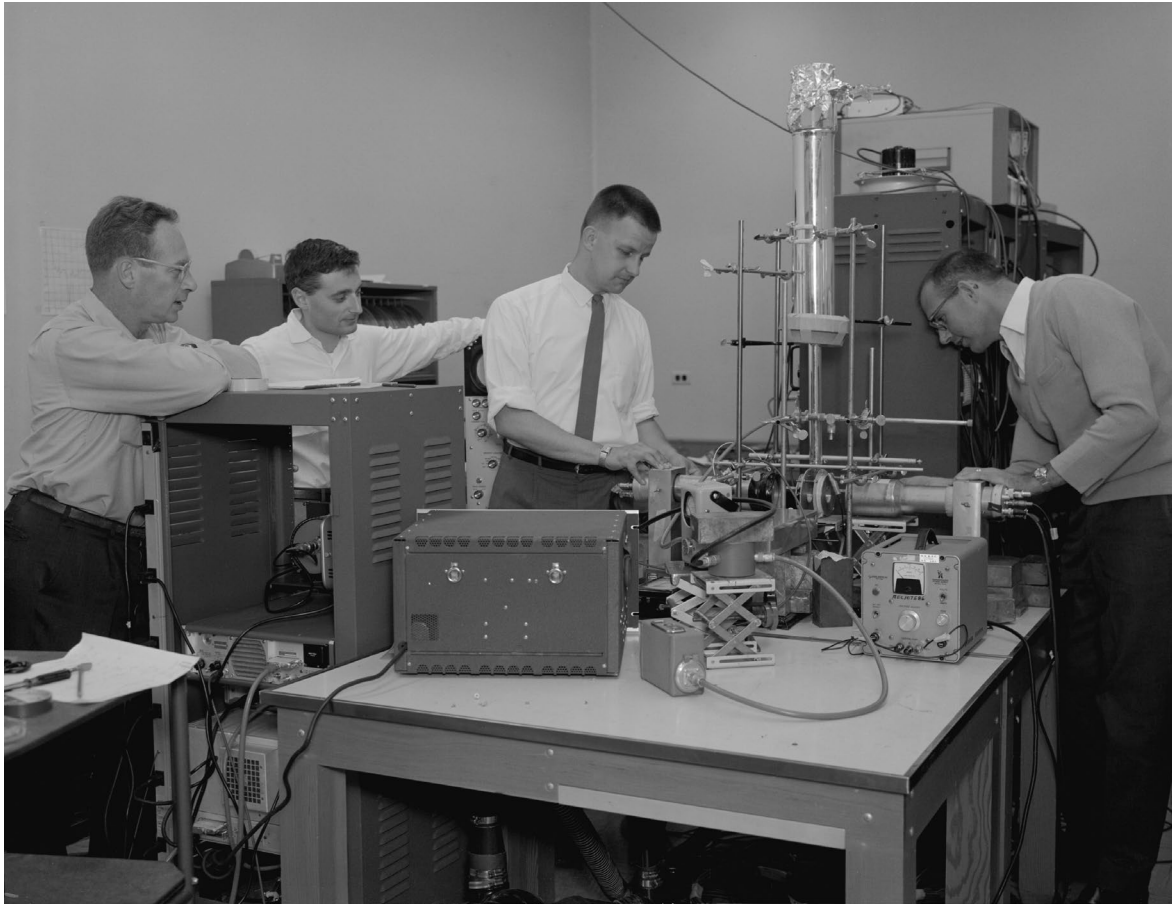
Left: the title page of Eckart Matthias’
doctoral dissertation, Uppsala 1963.

E. Matthias met his later wife, Barbro, in Uppsala, and they married and had two children, Björn and Katharina, while there. Their second daughter Karin was born in Berkeley in 1967, and their youngest, Andrea, in Berlin in 1970.



Uppsala, 1963 (Blue circle: Institute director Kai Siegbahn; red circle: Eckart Matthias)

Eckart Matthias in Berkeley (1963-69)



From the right: Eckart Matthias, David Shirley, Norman Edelstein, & Mel Klein, adjusting the setup for NMR detected via PAC, 1966.

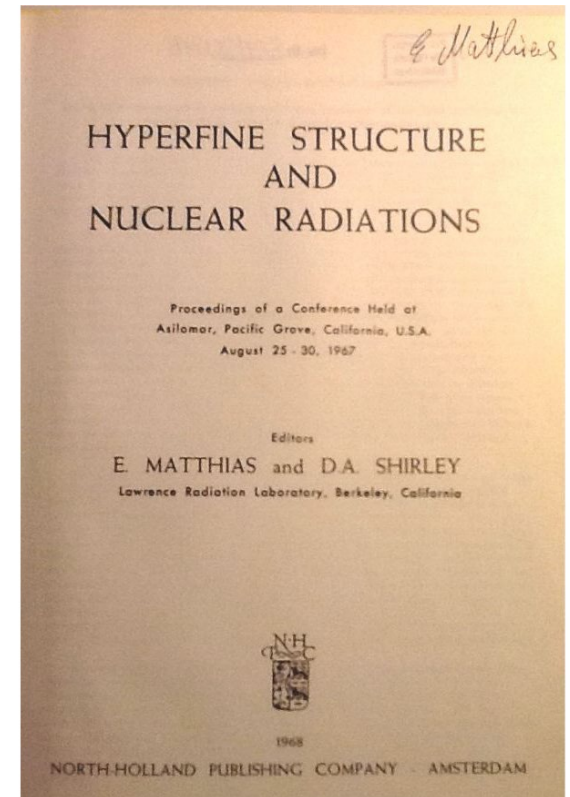


Image on the right: the title page of the proceedings of the *Asilomar Conference on HFI*, organized by E. Matthias and D.A. Shirley, 1967.

Beginnings in Berlin (1969-1972)

Things were difficult during the first years in Berlin. Laboratory equipment was outdated or completely lacking, group members had to be recruited and organized, funds had to be acquired to support research. Matthias changed the focus of his research activities from the nuclear and nuclear/solid-state physics that he had pursued in Uppsala and Berkeley to – in the most general sense – interactions of laser light and synchrotron radiation with matter, in all its forms. As he himself put it, Berkeley was ‘paradise’, and Berlin, in the early years, just the opposite.

At the same time, the structure of the university was changing and a new university law took effect in 1970, accompanied by a good deal of friction and unrest between faculty, mid-level academics and students.

A major milestone during this early period was the successful application by the *FB Physik* for a new ‘*Sonderforschungsbereich*’ (‘Collaborative Research Centre’), funded by the DFG. Its title was ‘Hyperfine Interactions’ (Sfb 161), and it provided research support and positions for researchers (in particular for doctoral students) over a period of 14 years (1972-1986). It was succeeded by various other Sfb’s in the following years, and the success of the Department in acquiring this external funding was one of its major strong points during the entire Matthias-Bennemann era and beyond.

Later work in Berlin (and elsewhere) – time does not permit a complete survey of the work of the Matthias Group – nor of the Bennemann Group – over the 30 years of their active work in Berlin. Instead, I will show some pictures from that period, and refer to the following two lectures.



The 'Berkeley Mafia' in Berlin, Christmas 1970. Eckart and Barbro Matthias are indicated by a red ellipse. Center front is David Shirley, the *spiritus rector* of the Berkeley group, here as an academic visitor in 1970/71.

Front row, left to right: Mary E. Brewer, David Shirley, Helmut Gabriel; standing, l. to r.: Dieter & Dorothea Quitmann, Virginia Shirley, Barbro & Eckart Matthias, Patty & Jim Huntzicker, William Brewer, Erwin Klein, Steven & Ellen Rosenblum



At left: Eckart Matthias and David Shirley in Sweden, following the HFI-III Conference in June, 1974.

At right: the AG Matthias in front of the institute building at Boltzmannstr. 20, ca. 1981.

(For details see the following lecture by Prof. Gdde.)



Eckart Matthias honors and activities in Berlin, 1970-2000.

- 9 Semesters as FB Sprecher/Dekan (Chairman of the Department)
- Honorary doctorate, University of Gothenburg, Sweden, 1997
- Project leader in several *Sonderforschungsbereiche*
- Mentor for numerous doctoral dissertations and several *Habilitation* degrees.



Matthias research group, at the 'new' building, 1982

Karl-Heinz Bennemann was born on the 31st of July, 1932 in Münster. He lived in his youth in a nearby village, *Drensteinfurt* in Westphalen, where he met his later wife, Brigitte Metzger; they were married in 1960. After obtaining his Diplom with Adolf Kratzler at the University of Münster that same year, he moved to the University of Illinois at Champaign-Urbana, where he completed his PhD in 1962 in the group of John Bardeen.



Drensteinfurt i. Westf.

Honekamp

Left: Drensteinfurt near Münster, where Karl-Heinz Bennemann grew up.

Bennemann's three children, all sons, were born in the USA: the oldest, *Marcus*, in Urbana, 1962; the middle son, *Andreas*, in Chicago, 1966; and the youngest, *Christof*, in Rochester/NY, 1968.

After receiving the PhD, Bennemann initially stayed on at Illinois as a research associate, then returned to Germany for two years in Karlsruhe (at the TH Karlsruhe, now KIT) in 1964, going to Chicago in 1966, before becoming a professor at Rochester in 1967.



Above: an early school class showing Bennemann as a pupil.

Right: Karl-Heinz Bennemann at the FU Berlin, 1070's.



The Bennemann family arrived in Berlin in May, 1971, and his position as professor at the FU was soon confirmed. They then moved into the house at Starstr. 12 in Berlin-Dahlem, which has remained their home until today.

(Hier abtrennen)
Anmeldebestätigung
(vgl. Rückseite, Ziffer 9) **Nebenwohnung**

Vor- und Familienname: Bennemann Fam.-Stand: VERH. Beruf: PROF.
 geb. am: 30.7.32 in: MÜNSTER/WESTF. Staatsangehörigkeit: DEUTSCH, hat sich – mit den nachstehend verzeichneten Familienangehörigen – als wohnhaft in Berlin STARSTR. 12 DAHLEM
STARSTR. Nr. 12 In Haupt-/Nebenwohnung angemeldet.
Strasse (Nicht Zutreffendes streichen)
 Bisherige Wohnung: ZEHLENDORF Kreis HANDJERY STR. Nr. 69
Gemeinde Strasse

Familienangehörige:

Familienangehörige	Vorname <small>(bei der Ehefrau auch Geburtsname)</small>	Ausgeübte Tätigkeit / Beruf	Geburtsdatum	Geburtsort	Staatsangehörigkeit
Ehefrau	<u>BRIGITTA METZGER</u>	<u>Hausfrau</u>	<u>15.5.36</u>	<u>DRENSTEINFURT</u>	<u>DEUTSCH</u>
1. Kind	<u>MARCUS</u>	<u>Schüler</u>	<u>11.4.62</u>	<u>URBANA, ILL.</u>	<u>AMERIKANER</u>
2. Kind	<u>ANDREAS</u>	<u>Schüler</u>	<u>8.11.62</u>	<u>CHICAGO, ILL.</u>	<u>AMERIKANER</u>
3. Kind	<u>CHRISTOF</u>	<u>Schüler</u>	<u>13.5.69</u>	<u>ROCHESTER, NY</u>	<u>AMERIKANER</u>

Tag des Einzugs: 15. Sept. 19 71
 (Meldestempel)
 (Meldbehörde)
 (Unterschrift)
 M. A. Saup
 Polizeikommissar



The Bennemanns at the entrance to their house in the Starstr., around 1995

Above is their original *Anmeldebestätigung*, the official confirmation of the family's move to the *Starstr.* house on September 15th, 1971.

Scientific recognition in Berlin and elsewhere

International Workshop on the
Current Problems in condensed Matter: Theory and Experiments
Hotel Hacienda Cocoyoc, Morelos, México
January 5-9, 1997


The object of the Workshop is to bring together the leaders on the theory and experiments in condensed matter to discuss recent advances, current applications and future prospects. The workshop will be dedicated to Professor Karl Heinz Bennemann to honor not only his great contributions to science, but also his remarkable qualities as a scientist and friend.



Invited Speakers

Invited Speakers

B. Alascio, Bariloche, Argentina
M. Arignon, CNRS Grenoble, F.
K. Baberschke, Freie Universität



The Mexican Physical Society

on behalf of the International Scientific Community, extends this special

RECOGNITION TO

Dr. Karl Heinz Bennemann

for his outstanding contributions to the development of Condensed Matter. The Mexican Physical Society has dedicated the "International Workshop on the Current Problems in Condensed Matter: Theory and Experiments" to professor Bennemann not only to recognize his scientific contributions in this field, but specially to highlight his qualities as scientist and friend.

Cocoyoc, Morelos, M

**Symposium on
Clusters, Magnetism,
High-T_c-Superconductivity and
Nonlinear Optics**



Universität
Münster

K. Baberschke, Berlin
H.-J. Güntherodt, Basel
F. Hensel, Marburg
W. Hübner, Halle
R. Kerner, Paris
J. Kirschner, Halle
K. Lüders, Berlin
E. Matthias, Berlin
B. Mühlshlegel, Köln
G. M. Pastor, Toulouse
K.-H. Rieder, Berlin
J. Schmalian, Urbana
P. Stampfli, Innsbruck

October 10, 1997 - Berlin

This symposium is dedicated to K.-H. Bennemann

**Freie Universität Berlin
Fachbereich Physik,
SFB 290, SFB 337,
Großer Hörsaal,
Arnimallee 14, D-14195 Berlin**



Organization:
F. W. Froben, M. E. Garcia, P. J. Jensen
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e-mail: garcia@physik.fu-berlin.de
<http://www.physik.fu-berlin.de/~garcia/snoc.html>



Lieber Herr Bennemann,

vielen Dank für die erfolgreichen Sfb Jahre und die gute Kooperation.

Die Zeiten, die Perspektiven und die Sfb Nummern (161, 6, 290, 337 sowie 450) haben sich geändert! Der Erfolg blieb!

Für Ihr Engagement, das vielen Berliner Physikern und Mitarbeitern die Chance gab, erfolgreich zu forschen und zu arbeiten danken wir recht herzlich.

Die Sonderforschungsbereicher



Left: A letter of appreciation written to Prof. Bennemann from the staff of the *Sonderforschungsbereich* office, who administered the (many) Sfb's for which he was Applicant, Chairman and /or Project leader.



Rüdiger Bullisch



Hanneke Veld



Peter Ma



R. von Stechow



Christa Bull

Festkolloquien

aus Anlass der

Ehrenpromotion

von

Professor Dr. Dr. h. c. Stefan Hübner

und der

Emeritierung

von

Professor Dr. Karl-Heinz Bennemann

und

Professor Dr. Dr. h. c. Eckart Matthias

Ort: Großer Hörsaal des Fachbereichs Physik, Arnimallee 14, Berlin - Dahlem

Programme

Donnerstag, 23. November 2000

Freitag, 24. November 2000

The poster announcing the colloquia honoring the retirement of Profs. K.-H. Bennemann and E. Matthias, and the honorary doctorate for S. Hübner, all key figures in the development of the *Fachbereich Physik* in its early years, and, for the first two, continuing for 30 years after.

Conclusions

The physics department at the *Freie Universität Berlin* underwent a complete transition 20 years after its founding, in 1968-72. The initiators of that change were *Lindenberger* and *Wilking*, but its 'architects' were *Hüfner*, *Matthias*, and *Bennemann*. Those latter three spent years of effort on its modernization and putting its funding on a sound basis. As a result, by 1972 it had two new institutes, and the older ones had greatly increased in size, funding and potential.

The past 20 years have seen a complete generation change at the *FB Physik*, but its modern version still benefits from those – at times arduous – efforts of 50 years ago.

Today, we honor the 90th birthdays, soon to take place, of two of those pioneers; those two who gave the longest leadership and are here today to receive our recognition: ***Eckart Matthias*** and ***Karl-Heinz Bennemann***.