

Nico van Kampen: charlatans beware!

Views of a Physicist: Selected Papers of
N G van Kampen

(ed) Paul Meijer

2000 World Scientific 300pp £46.00/\$54.00hb

Nico van Kampen is one of the most outstanding theoretical physicists of the second half of the 20th century. He is very much a theorist's theorist and most physicists do not know him well. There is therefore a danger – as was the case with his teacher Hans Kramers – that his name may slide into oblivion for lack of a single eye-catching achievement. In Kramers' case, it was felt that this fate could be avoided by publishing a collection of his scientific papers (see "Hans Kramers: a master thinker" *Physics World* August 1998 pp55–56).

The editor of the present book, Paul Meijer, also decided that a collection of some of van Kampen's papers would be a suitable way of introducing him to the general physicist. For those of us who know van Kampen, his attitude to physics, as he approaches it these days, certainly shines through in these papers, which include invited lectures, speeches, popular-science writing, obituaries and book reviews. As his former pupil, the 1999 Nobel-prize winner Gerard 't Hooft, writes in the prologue: "Here comes van Kampen to show up the charlatans." I strongly recom-



Powerful thoughts – Nico van Kampen does not like sloppy or dishonest thinking in physics

struggling to understand the enigmas of nature – rather than struggling to obtain funds. And of course computers were not there to distract you from real physics". Some of the shortcomings of today's science are shown up in the papers entitled "The danger of science management" and "Bibliometry – is it a Science?"

The second main theme that emerges is

with experiment."

Van Kampen also criticizes the approach that physicists often take in statistical mechanics when making the transition from a microscopic description to one that can be compared with macroscopic phenomena. "One cheats a bit," he writes. "One averages the result obtained for a short time interval, and computes afresh the average over the next short time interval. And so on. That implies the drastic assumption that the intermediate averaging does not affect the result. For lack of justification of this assumption one has thought up many names for it... Also numerous attempts have appeared in the literature in which this assumption is carefully hidden. Such an attempt may produce a certain fame for the author, but for the health of physics it is better to formulate openly the difficulty."

Most of the papers in this collection were chosen because they would otherwise be hard to obtain, often because they were originally written in Dutch. As Meijer puts it: "It is unlikely that there will be many more Maxwells, who undertook the trouble to learn Dutch solely to get acquainted with the thesis of van der Waals." It is interesting to note that two centuries earlier Hooke had done the same in order to read van Leeuwenhoek's communications to the Royal Society.

I have only one small criticism of the book. As the publishers, World Scientific, were willing to publish more than 900 pages of papers by John Bell, they should have been willing to add a hundred or so pages to the present volume to include some of van Kampen's technical papers. After all, his PhD thesis, which gives the final development of Kramer's ideas about renormalization, is published in the *Proceedings of the Danish Academy*, while his fundamental attack on linear response theory is his contribution to a Festschrift for Harald Wergeland, published in *Physica Norvegica*. These two papers are not easily accessible yet they both show van Kampen at his best. Another technical paper that I wish had been included is the one in which the van Kampen modes – cousins of Landau damping – are introduced.

Finally, the value of this volume would have been greatly enhanced if it had included a list of van Kampen's publications – if only to acquaint the reader with the multifaceted interests of this exceptional physicist.

Dirk ter Haar is an emeritus fellow of Magdalen College, Oxford, UK. He is the author of *Master of Modern Physics: The Scientific Contributions of H A Kramers* (1998 Princeton University Press)

"Van Kampen's papers have to be read carefully."

mend this selection of papers, which sheds a strong illuminating light on present-day physics – warts and all.

Van Kampen's papers have to be read carefully because some of the more important lessons to be learned from them follow from sentences that are more or less thrown away. For instance, in a paper entitled "From statistical mechanics to quantum mechanics", the introductory paragraph ends with the following: "My concern is therefore a purely intellectual satisfaction. It is of little concern for those who are contaminated by the fashionable market thinking, I mean the view that science has no other purpose than to increase profits. The only defence against this mindless commercialism is the scientific researcher's unbridled urge to understanding."

There are some powerful lines of thought running through many of these papers. First, one gets a feeling of nostalgia for science as it was in the days when, as van Kampen puts it, "working (on a scientific subject) still meant

van Kampen's criticism of what he calls "Postmodern obscurantism". He is especially critical of those scientists who try to cloak quantum mechanics in some kind of mysticism. "John Bell, Roger Penrose and others writing for the general public do a disservice to science by clothing quantum mechanics in a mystical aura," argues van Kampen. "It is a perfectly logical, coherent physical theory, which can be understood rationally. The mysticism is theirs."

Third, we have van Kampen's attack on the sloppiness and dishonesty of many of the most fashionable theories. For example, he has the following to say about renormalization theory: "It starts from a basic question that is mathematically meaningless; one which then expands formally in powers of some interaction constant and obtains a series, which not only diverges but whose terms are each given by a divergent integral. One then resorts to a collection of ad hoc recipes in order to extract from this mess finite numbers that can be compared