Viewpoint

Only One Earth

The first United Nations Conference on the Human Environment from 5-16 June 1972 in Stockholm could provide a real impetus to European physicists to apply their talents to the improvement of living conditions. The conference is 'to serve as a practical means to encourage, and to provide guide-lines for, action by governments and international organisations designed to protect and improve the human environment and to remedy and prevent its impairment, by means of international cooperation, bearing in mind the particular importance of enabling developing countries to forestall the occurence of such problem.'

No doubt in Stockholm will be many political aspects and organisational problems which will attract attention better devoted to discussions on protective measures, ameliorative programmes and remedial actions. However, the impact of the Conference should lead European and other governments to foster research into the provision of means of coping with environmental hazards. This would be the most significant outcome of this UN Conference on the Human Environment — that scientists, including physicists in instrument development, should receive the support to reorientate themselves towards addressing the critical global environmental problems that menace the future of our one, and only one, earth.

Europhysics Style Manual

A guide to authors of papers in Europhysics Journals prepared by the EPS Advisory Committee on Publications

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Foreword

This guide is intended to provide clear criteria which will help authors to prepare their papers in a way which minimizes the number of editorial alterations required and hence the time needed for publication. It does not aim to provide advice on how to write clear, useful, concise papers. Such advice is provided by the IUPAP-Unesco Guide for the Preparation of Scientific Papers for Publication (IUPAP 14 or Unesco SC/MD/5) and to some extent by the Style Manual of the American Institute of Physics. Check-lists to assist authors in the presentation of numerical data

are also likely to be produced soon by CODATA, an organization concerned with data storage and evaluation. Only if such presentation satisfies certain criteria (for example, adequate indication of conditions, material, etc.) are the data of value to such organizations. (See paper by D. Garvin, *J. Nat. Bur. Standards*, Section A. Spring 1972.)

The recommendations made in this guide are in accordance with the general view of the editors of primary physics journals in Europe, especially those recognized by EPS as Europhysics Journals, but there are small variations in practice from publisher to publisher, some of which are indicated at appropriate points. It is always advisable for an author to look at the layout of articles in a recent number of the journal to which he is submitting his paper.

1 Material to be submitted

The following material will be required before a paper can be prepared for the printer and time will be saved if it is all submitted at the outset.

Two copies of the manuscript each with :

Author's (or authors') name(s) with initials and establishment(s) *where the work was done.*

Present address(es), if different, as footnote.

Abstract on title page or separate sheet.

List of references as described in § 8.

List of captions for figures.

Shortened title (if necessary) of not more than 50 letters for use at page head.

All diagrams and glossy prints of photographs for final reproduction

Contents

(see § 6) with author's name in pencil.

A set of copies of the figures (not larger than the typing paper if possible) with all lettering included, with each copy of the manuscript for referee use.

An English version of the abstract if the paper is not in English.

A covering letter, signed by one of the authors requesting publication, should accompany this material.

The author should indicate to two decimal points (for example, 17.56) under which headings of the Physics Abstracts Classification System his paper should be indexed. The Physics Abstracts Classification System is still under revision. The current one will be found at the beginning of recent volumes of Physics Abstracts.

2 General presentation

Manuscript must be typerwritten, or legible photocopies of typescript, one side of the page only, in double-spacing and with a margin of 4 cm. Good quality white bond paper of A4 (21 × 29.7 cm) or foolscap (8 × 13 in) should be used. All pages should be numbered. Mathematics should be legible and authors should indicate by name in the margin any special type required (for example, Greek, Gothic, bold script) where it first occurs in the text. Symbols for physical quantities in the text and normal symbols in formulae will be printed in italic but usually need not be underlined. (For some journals it is helpful to the editor if underlining of symbols is done by the author.) Vectors will be rendered in bold face (v) and should be underlined with a wavy line ($\underset{\sim}{v}$) or marked with an arrow ($\overrightarrow{v}$) ; tensors should be indicated as bold sans serif type. Handwritten symbols and letters should be clearly written with marginal notes if any ambiguity exists. (See § 5). No cross-references by page-number should be used ; the section and subsection should be quoted.

Section headings should be numbered with arabic numerals and placed at the left hand side of the page beginning with

1 Introduction

and continuing in the same fashion, including Conclusions ; the Acknowlegements' section heading need not be numbered. Subsections, if used should appear as

2. 2. Room temperature results

and subsections, if needed, may be labelled 2. 2. 3, etc.

Insertions in the manuscript must be typed on separate sheets and numbered (for example, 6a, with a note at the bottom of page 6 that it is to be followed by page 6a, and a note at the bottom of page 6a indicating on what page the text continues).

3 The title page

The title and details of the authors should appear on a separate sheet. The abstract may be typed on this sheet if there is room for all of it ; otherwise the abstract should have a separate sheet.

If more than one paper with the same title and the same or different authors is submitted at the same time the title should include a sub-title preceded by a Roman numeral.

The name(s) of the author(s) should be given below the title and followed by the name(s) of the establishment(s) where the work was done. The postal address(es) should be given. Present address(es), if different, should be indicated in a footnote. Acknowledgements of supporting organizations may be given in a footnote or in the 'Acknowledgements' section.

The date of receipt of the manuscript will be inserted by the Editorial Office.

4 Abstract

Each paper must have an abstract typewritten as the body of the manuscript of a length not exceeding 3 % of the text, or 250 words, written continuously (that is, without paragraphs). The title should be regarded as part of the abstract but it should otherwise be self-contained, not quoting the figures or references. It should be clear, concise and informative giving the scope, the main results obtained and, for experimental papers, where this is not obvious, some indication of the methods used. Examples of (i) good and (ii) bad abstracts are :

(i) Absorption measurements for cadmium vapour give cross-sections of 7,9 and 12 × 10^{-18} cm^2 ($\pm$ 10 %) at 500, 700 and 1000 Å. These values are not in agreement with those of 20, 25 and 35 × 10^{-18} cm^2 calculated by Smith from a dipole velocity formula.

(ii) The absorption of cadmium has been measured in the range 1000 Å to 500 Å, and the results are not in agreement with theory.

If the language of the paper is other than English, an English version

of the abstract should also be given, the first line of which should be an English version of the title.

For general guidance on the preparation of abstracts is given in the Unesco document SC/MD/5.

5 Formulae

Display formulae must be clearly written each on a different line and well separated from the adjacent text. They should be numbered in the right hand side either consecutively through the text or with a compound number (for example, 3.16) which contains the section number. Particular care should be taken about the following points

The clear distinction between similar letters and symbols (see Table 1)

Table 1

Similar letters and symbols

K k χ h V v ν τ γ r	X x $\times$ $\varkappa$ χ Ψ ψ	C c / 1 7	α a α ∞ ϱ / e
U u μ n P p ϱ	S s Z z 2 3 ξ ζ	O o W w ω	Φ φ $\varnothing$ ϵ ε E

Also note $<$ (less than) and $\langle$ (bracket).

The use of brackets to indicate clearly what part of an expression should form the denominator of a fraction or be raised to a particular power. Brackets should be used in the order $\{[(\quad)]\}$.

The clear indication of indices, superscripts, and subscripts by caret and inverted caret markings and $\hat{i}$.

The avoidance wherever possible of subscripts and supersripts to indices, subscripts and superscripts.

The form exp(....) is often better for an exponential. For simple fractions in the text the solidus should be used (for example, $\pi/7$ rather than $\frac{\pi}{7}$) but the proper fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{3}$ are available as single types so that ($\lambda/2$) π should be given as $\frac{1}{2}\lambda.\pi$. In displayed formulae

$$\frac{6 + 5h + g}{3yz^2}$$

is better than

$$(6 + 5h + g) / (3yz^2),$$

and

$$\frac{(a/b) + (c/d) + (a/d)}{(a^2 + b^2)(c^2 + d^2)}$$

is better than

$$(\frac{a}{b} + \frac{c}{d} + \frac{a}{d}) / (a^2 + b^2)(c^2 + d^2)$$

If complicated expressions are used a number of times, single symbols should be used to define them on the first appearance and those used thereafter. In a product that runs on from one line to the next a multiplication sign should be put at the beginning of the second line not at the end of the first. For $\log_e$ use ln. A zero should always precede a decimal fraction (for example, 0.123, or 0,123 in non-English text). It is awkward to set a superscript vertically above a subscript and printers will normally set m_e^2 as $m_e{}^2$. For roots of anything other than a simple symbol or number fractional superscripts are best, although some publishers are prepared to use a radical sign and a vinculum (bar) to cover the portion of the expression involved. Average values of quantities other than those given by single symbols are best given as

$$< x^2 + y^2 >_{av} \text{ not } \overline{x^2 + y^2}.$$

6 Illustrations

Figures, whether diagrams, graphs or photographs, should be numbered consecutively in arabic numerals in the order in which they are mentioned in the text and this number together with the author's name should be written in pencil in the top right-hand corner.

The fair copies for reproduction of diagrams should be in Indian ink on tracing paper, linen, white card or plastic and of sufficient size to permit reduction in printing, although very large figures should be avoided and, unless there is a special reason, they should not be larger than A4.

Reductions of $1/2$, $1/3$ and $1/4$ are normally used and the size of figures should allow for a suitable accommodation to the journal page size using one of these ratios.

Sizes of lines, axes, symbols and letters must comply with the following table.

Table 2
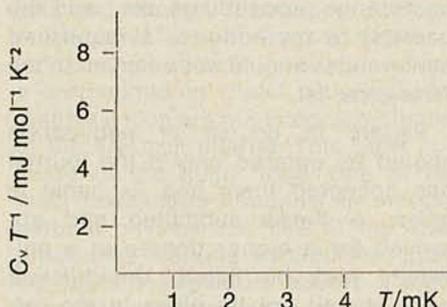### Sizes of lines, axes, letters and symbols

Reduction	Minimum line thickness (mm) in axes and cuves	Letters and Symbols	
		Height (mm)	Thickness (mm)
$1/2$	0.2	4	0.4
$1/3$	0.3	5	0.5
$1/4$	0.4	7	0.7

Inscriptions on drawings should be kept to a minimum and all explanations of different types of curve or

data points should be incorporated in the caption. It is best to label curves with single symbols or with identifying letters. Some journals prefer that all lettering should be in pencil including numbers used to label the graduations on the axes. The detailed grid of a graph should not be reproduced, but grid lines at major multiples of units may be shown. The copies of the figures (see § 1) *should* be lettered.

Notations of quantities and their numerical values on the axes must be made with care.

If the lettering is printed one can distinguish between the physical quantity (in italic) and the unit (in Roman) and use such notations as ϱ/ohmcm or T/K which are thus pure numbers ; this holds also for derived quantities (for example, $C_v T^{-1} / \text{mJ mol}^{-1} \text{ K}^{-2}$). The most convenient notation on the axes is, for example, as shown in the figure

although $10^3 T/\text{K}$ is also unambiguous (at the graduation marked with a number 3 then $10^3 T/\text{K} = 3$ so $T = 10^{-3}\text{K}$). It is preferable not to use T (K), etc.

If the lettering is not printed extra care is needed. However, confusion can be avoided if the symbol or combination of symbols for the quantity is always placed to the left of the solidus and the unit or combination of units to the right of the solidus.

In both situations indications like $\times 10^{-3}$ (with multiplication sign) can be placed near one of the numbers on the axis, but it is better to avoid this by use of modified units (for example, μ ohm, MeV, nV, mm.) In cases of doubt or difficulty, a full explanation should be given in the caption.

Essential photographs can be reproduced but they should be avoided wherever possible ; they should be on glossy paper, unmounted, with as much contrast as possible. Magnifications for photomicrographs should be indicated by a scale mark on the print, and the orientation of photographs should be indicated (for example, by TOP) if any ambiguity exists.

Line diagrams of apparatus should be schematic and detailed dimensions should not appear in the figure.

Captions must not be written at the bottom of figures but collected together on a page specially provided.

If figures are reproduced from other articles the source must be quoted.

7 Tables

Each table must be typed on a separate sheet and labelled at the top with consecutive arabic or Roman numerals and as concise as possible a title. Even small amounts (4 lines) of tabular material should be treated in this way.

Headings for columns in tables should be brief and follow the pattern indicated in § 6 for the notations on the axes of figures.

Footnotes to a table should be indicated by lower case letters and listed below the table.

References for data in tables may be given in full in footnotes or indicated in the footnote in the manner used for references in the text.

Guidance on the presentation of numerical data in the primary literature can be obtained from *CODATA, Westendstrasse 19, D - 6 Frankfurt / Main, Federal Republic of Germany.*

8 References and footnotes

Footnotes should be indicated by a dagger, asterisk, etc., in the text and typed between two horizontal lines immediately after the line of text containing this indication. (Some publishers prefer footnotes collected on a separate sheet).

References must be typed together on a separate sheet in order of their appearance in the text.

References are made in the text with superscript arabic numerals and a following bracket, in order of their appearance. (The Philosophical Magazine and The Journal of Physics currently use the Harvard system, where the list is in alphabetical order, by first author's name, and the text uses the author's name and the year in brackets as reference indicator). The incorporation in the text of the names of the authors is strongly recommended ; *et al* should not be used for less than three authors. Names of all authors should be given in the references.

In the list of references the form to be used for journal references is

5. SMITH, S., and JONES, J.H., Phys. Rev. **295** (1972) 422
and for book references is

7. CARROLL, L., *Introductory Nuclear Physics* (Cavendish Press, Oxford) 1953, p. 50.

If authors wish to use lower case for names to clarify ones like de Gennes or McGregor they may do so ; the printer will treat them appropriately.

Abbreviations of periodical titles should preferably conform to those recommended by member societies of ICSU AB.

The form given in the list of journals abstracted by *Physics Abstracts* is close to that used by most journals. If the author is in any doubt it is best to leave the title in full. A list of the more common journals will be given in Appendix C in the final printed version.

The publisher, town and year of publication should be given for books, conference proceedings, etc., and the name(s) of any editor(s). Unpublished conferences should not be given in the reference list.

Papers in course of publication should be entered only if the journal has accepted them and its name is given. A thesis submitted and approved for a higher degree at a university may be listed. Unpublished work should not be given in the references but mentioned only in the text (for example, (H. Marcuse 1969, Private communication) or (O. Welles, to be published)). The name of the institute of authors whose private communications are quoted would be helpful. Internal laboratory reports not available on request should not be quoted; those available may be.

Whenever possible references to Russian literature should give the original and any translated version.

Appendix A: Symbols, Units and Nomenclature

Authors are encouraged to follow the recommendations of the Document UIP 11 (SUN 65-3) 1965, of the International Union of Pure and Applied Physics and any later IUPAP recommendations. Document UIP 11 (SUN 65-3) 1965 may be obtained from *Professor Dr. U. Stille, Physikalisch-Technische Bundesanstalt, Bundesallee 100, D - 33 Braunschweig, Federal Republic of Germany.*

In any case, authors are urged to make clear the system they are employing.

Appendix B: Correction of Proofs

Proofs should be checked carefully and returned promptly.

Only essential corrections should be made and alterations involving displacement of type should be avoided. The name of the author to whom proofs should be sent should be indicated in the covering letter. A list of acceptable proof correction signs will normally be sent to authors with their proofs.

Appendix C: Abbreviations of Journal Titles

A list of the more common journals with the recommended abbreviations will be given in the final printed version.

Belgian Physical Society Meeting
University of Liège, 7-8 June 1972

Individual contributions on :

  I : Nuclear Physics
  II : Atomic and Molecular Physics
  III : Solid State
  IV : Elementary Particles
  V : Plasma Physics
  VI : Quantum Electronics

Invited papers :

Wednesday 7 June
  9.15 S.F. Edwards (Manchester) Dynamics of macromolecular networks
10.15 G. Backenstoss (Karlsruhe and CERN) Mesonic and hadronic atoms
11.30 Sessions I II and III
14.30 Sessions I, II and III
16.30 P.O. Löwdin (Uppsala) Quantum physical aspects of heredity
Thursday 8 June
  9.15 J. Tomasi (Pisa) Approximations électrostatiques dans les interactions moléculaires
10.15 G. Bret (Quantel, Vigneux-sur-Seine) Lasers à impulsions brèves (title to be confirmed)
11.30 Sessions IV, V and VI
14.30 Sessions IV, V and VII
16.30 M. Nicolet (Brussels) La physique d'une atmosphère planétaire

Further details can be obtained from the secretary of the Belgian Physical Society, M. Neve de Mevergnies, C.E.N./S.C.K. Boeretang, 200, B-2400 MOL, or from J. Depireux, Chairman of the B.P.S., Institut de Physique, Université de Liège, Sart-Tilman, B-4000 Liège.

Selected Volumes
Frontiers In Physics Series
David Pines, Editor

P. W. Anderson
Bell Telephone Laboratories
CONCEPTS IN SOLIDS
Lectures on the Theory of Solids
1964 (2nd printing, 1971), x, 188 pp.,
illus., paperbound, $5.95

"Topics chosen reveal the core of modern solid state theory. There is a natural division into one-electron theory and many-body theory. One-electron topics include discussions of methods of calculating band structure both with and without external perturbing fields. The treatment of the Hartree-Fock method and of effective Hamiltonian theory are particularly illuminating. The second half of the book is devoted to the concepts of elementary excitations in many-body theory. The discussions of broken symmetries and of the magnetic state are particularly unique and particularly useful." *American Scientist*

Vernon D. Barger and David B. Cline
University of Wisconsin
PHENOMENOLOGICAL THEORIES OF HIGH ENERGY SCATTERING
An Experimental Evaluation
1969, x, 201 pp., illus., paperbound, $7.95

An up-to-date survey of fundamental particle interactions at high energy. Representative trends of existing experimental data on strong interaction scattering processes are summarized and theoretical interpretations of this data are presented. The central theme is a parallel development of theoretical and experimental aspects of particle physics.

Walter A. Harrison
General Electric Research Laboratory
PSEUDOPOTENTIALS IN THE THEORY OF METALS
1966 (2nd printing, 1971), xvi, 336 pp.,
illus., clothbound, $10.00

"The value of this book lies in the presentation of a particular theoretical approach, including the detail of the calculations, a justification of the model and a clear statement of the range of applicability of the method. The book is a clear and logical account and contains a number of unpublished applications of the point-potential method, notably to the computation of stacking fault energy." *The Australian Journal of Science*

Leo P. Kadanoff
University of Illinois
Gordon Baym
Institute for Theoretical Physics, Copenhagen
QUANTUM STATISTICAL MECHANICS
Green's Function Methods in Equilibrium and Nonequilibrium Problems
1962 (2nd printing, 1971), xii, 203 pp.,
illus., paperbound, $8.95

These lectures are devoted to a discussion of the use of thermodynamic Green's functions in describing the properties of many-particle systems. These functions provide a method for discussing finite-temperature problems with no more conceptual difficulty than ground-state problems; the method is equally applicable to boson and fermion systems, equilibrium and non-equilibrium problems.

J. J. J. Kokkedee
University of Nijmegen, The Netherlands
THE QUARK MODEL
1969, xiv, 239 pp., illus., clothbound,
$17.50; paperbound, $7.95

The acceptance of the theory of SU(3) symmetry by particle physicists led, in 1964, to the Gell-Mann-Zweig hypothesis that strongly interacting particles (hadrons) are built from a triplet of fundamental objects — quarks — and a corresponding triplet of antiquarks, entities which are not integral multiples of the electron charge. This book is a study of the quark idea, one of the most fascinating concepts in modern particle physics and one of the most productive working hypotheses, guiding particle physicists toward a more complete comprehension of the nature of matter.

A. B. Migdal and V. Krainov
I. V. Kurchatov Atomic Energy Institute
APPROXIMATION METHODS IN QUANTUM MECHANICS
1969, xii, 146 pp., illus., clothbound,
$17.50; paperbound, $7.95

The authors systematically teach the general principles relied upon by practicing theoretical physicists. For example, order-of-magnitude estimates, analyticity, symmetry and the standard approximation techniques are all treated. In addition, semi-quantitative approximation methods, Lamb shift and infrared divergencies, the Mössbauer effect, energy levels of deformed nuclei and quasi-classical scattering theory are discussed in depth.

R. Z. Sagdeev and Z. Z. Galeev
Novosibirsk State University, U.S.S.R.
NONLINEAR PLASMA THEORY
1969, xii, 122 pp., illus., clothbound,
$17.50; paperbound, $7.95

This monograph is an introduction to the theory of weak plasma turbulence suitable for graduate students specializing in plasma physics and for professional plasma physicists who wish to acquaint themselves with the general principles of this theory.

J. R. Schrieffer
University of Pennsylvania
THEORY OF SUPERCONDUCTIVITY
1964 (2nd printing, 1971), xiv, 282 pp.,
illus., clothbound, $10.00

Written by one of the originators of the pairing theory of superconductivity, this monograph provides a concise account of the microscopic theory of superconductivity and emphasizes the physical concepts and mathematical methods involved in understanding the phenomenon. Contents: Pairing Theory of Superconductivity. Applications of the Pairing Theory. Electron-Ion System. Field Theoretical Methods in the Many-Body Problem. Elementary Excitations in Normal Metals. Field-Theoretic Methods Applied to Superconductivity. Electronmagnetic Properties of Superconductors.

Julian Schwinger
Harvard University
QUANTUM KINEMATICS AND DYNAMICS
1970, x, 374 pp., illus., clothbound,
$17.50; paperbound, $7.95

"Reproduced directly from a series of lecture notes and publications from the mid 1950's to 1960's, modified by the addition of subheadings. It is of particular interest to those with professional and advanced academic interest in a variety of areas in quantum kinematics, statistics, and dynamics. The material is unavailable elsewhere, and is presented in a clear manner which does not require an extensive background in classical dynamics or quantum mechanics. The table of contents is complete enough and the subheading so clear that the lack of an index is hardly noticed. Should find some use as a graduate textbook and as a source of supplemental course material." *Choice*