Professors of theoretical physics require redemption of the Recommendation of the German Physical Society against the use of the Karlsruhe Physics Course at schools

The signatories of the declaration below:

– are all professors of theoretical physics. They have worked for many years in Germany, in other European countries an/or overseas as theoretical physicists in research and they have given lectures in Theoretical Physics.

– consider themselves to be competent enough to understand and to evaluate the criticism of the Karlsruhe Physics Course (KPK) given in the report commissioned by the Board of the German Physical Society (DPG). In particular, they also feel competent to judge the "notes, supplements and derivations for colleagues" (hereafter referred to with "supplements").

– are all members of the German Physical Society, in whose name the Board of the DPG has pronounced its recommendation against the use of the KPK.

– are neither declared advocates nor opponents of the KPK. They reject such a categorization, which is inappropriate for a scientific discipline.

Delimitation:

The following text makes no statement as to whether the concepts treated in KPK, compared with other concepts, are advantageous or disadvantageous in the daily work of the scientists or the education of students or pupils. It also says nothing about the "connectivity" of the KPK. Furthermore, the Declaration makes no statement as to whether the KPK contains errors. Instead, it refers exclusively to the criticism formulated in the report.

Declaration:

The signatories declare that they do not agree with the criticism formulated in the report and in the supplement. They consider the examples, that are to prove that the KPK contains "experimentally detectable false statements" unfounded. Therefore, they dissociate from the recommendation of the DPG Executive Board given in the name of the DPG members. They ask the DPG Board to withdraw the recommendation with immediate effect.

Additional comments:

A central argument of the report is that momentum currents, as introduced in KPK are unphysical. Thus, in the report and in the supplement it is claimed repeatedly that in the static situation of a tended spring there is no momentum flow. This statement is incorrect. In the supplement it is even claimed that a finite momentum current violates the local momentum conservation in static situations. Also this statement is false. Thus, substantial parts of the report are based on an incorrect basis.

To this end, a brief explanation: With reference to the continuity equation in its integral formulation, the experts argue that the correct momentum current is to be calculated only by integration over a closed surface, and the use of open surfaces is not permitted. But there is also a local formulation of the continuity equation; it corresponds to the local

momentum conservation law, and this can be integrated over any surface, i.e. also over an open surface. The local momentum conservation law guarantees that momentum can not be created locally, but can change only by means of currents. The tensor of the associated momentum current density can be identified with the negative of the stress tensor. In order to obtain the strength of a current through a given surface (which is open and oriented), one must integrate the current density over this (open and oriented) surface. When executing this procedure one obtains the strength of the momentum current discussed in KPK (there, each of the three components of momentum are discussed separately). In particular, momentum also flows through any tended spring, even in static situations. Thereby, local momentum conservation is not violated: the constancy in time of the density of a conserved quantity does not require that the associated current disappears, but only that it has no sources and sinks. Momentum current densities and momentum currents are an essential and indispensable part of physics.

The errors in the arguments of the report and in the supplement that contradict these facts have already been comprehensively reported elsewhere, e. g. in a discussion of our colleagues Christoph Strunk and Karsten Rincke (see http://www.physik.uni-regensburg.de / research / stalk / docs / stellungnahme_online_strunk_rincke.pdf).

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