

## Comments on UDC 52 Revision

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**Abstract.** The suggestions and comments on the UDC 52 revision, which has been carried out by George Wilkins during 1995–1998, are presented:

- to assign the subclass “522. Theoretical Astrophysics” for general aspects and methodological problems of this science;
- to transform the subdivision “524.8 The Universe. Metagalaxy. Cosmology.” as a subclass 525. In this subclass should be included theories of cosmology and observational confirmations of cosmological conclusions, relativistic astrophysics and gravitation theory, high - energy and nuclear astrophysics;
- to introduce new computer-readable compilations of astronomical data (catalogues, atlases, various inquiry information, numerical and graphical data) into correspondent subdivisions.

### 1. Introduction

The Universal Decimal Classification (UDC) is an international system of classification for all the branches of recorded human knowledge and has universal applications. It was created at the end of the 19th century by Belgian bibliographers Paul Otlet and Henry Lafontaine. The structure of UDC is well described in the International Medium Edition of “UDC” (1993) by the British Standard Institution or in the Third Soviet Edition of “UDC” (1983) by the State Committee of USSR on Standards and All-Union Scientific Research Institution of Technical Information, Classification and Encoding. The language of UDC – the arabic numerals and a few signs known from mathematics and ordinary punctuation – overcomes any languages’ barriers and is very suitable for computer presentation.

The flexible and dynamic system offers unlimited possibilities for its improvement and development according to the development and perfection of sciences. The UDC Consortium (The Hague) and British Standards Institution carry out the revision of UDC and rely on the support of users in many countries. The class UDC 52 including “Astronomy. Astrophysics. Space research. Geodesy.” has not been up-dated essentially since the 1970s (Wilkins 1995a). The Soviet Information Service VINITI began the revision, but disintegration of the USSR and common crisis in disunited republics, apparently, suspended this work. At the LISA II meeting in Garching, R.M. Shobbrook (1995) noted that “UDC has the potential for being one of the best classification systems in our (library) field and model for other classification systems”, but now UDC 52

is in a regrettable state and needs revision. G.A. Wilkins (1995a) described his revision project of UDC 52 and called for collaboration, addressing himself to the Friends of UDC 52.

After the LISA II meeting, G.A. Wilkins forwarded his revision project of UDC 52 to the Friends of UDC from different countries of the world. The project (Wilkins 1995b), presented as a number of ASCII files, which could be transmitted easily by ftp or ordinary e-mail, includes Guide, Schedules, Auxiliaries and Alphabetical Subject Index for 52/524.

In the file readme.txt G.A. Wilkins noted that the main problems on which he would like to have comments, especially from astrophysicists, are:

- his proposal that 522 should be used for “Theoretical Astrophysics”, including cosmology and supplements from theoretical physics;
- treatment of the subdivisions of Original UDC schedules such as 524.3 Stars, 524.7 Galaxies, 524.8 Universe;
- the use of 525 for compilations of astronomical data (and, perhaps, of physical and chemical data of relevance to astronomy), including also atlases and computer-readable compilations of numerical and graphical data.

In this paper the author would like to consider subsequently these problems of the revision from the astrophysical point of view.

## 2. The use of 522 for “Theoretical Astrophysics”

Indeed the idea of G.A. Wilkins to use 522 for subclass “Theoretical astrophysics” may be worthy. There is the section “Theoretical Astrophysics” in “Astronomy and Astrophysics Abstracts”, where general aspects and methodological problems of this science are elucidated. The subdivisions, included in this subclass, should be examined, regulated, and worked out in detail. For example, a large subdivision “Theories of stellar interiors and atmospheres” in division 522.5 should be considered as two separate subdivisions. Theories of stellar interiors are interconnected with the theories of stellar pulsations, whereas the theories of stellar atmospheres are closely connected with the theories of stellar spectra. To arrange such subdivisions consecutively would be logical.

## 3. The necessity of transforming the subdivision “The Universe. Metagalaxy. Cosmology.” as a subclass

The problem which should be dwelt upon is distinguishing “cosmology and relativistic theories” in independent subclasses, removing it from the subclass “522. Theoretical Astrophysics.” as G.A. Wilkins proposed.

Cosmology being the subclass of astronomy retains the specific features, such as a wide generalization, complete and profound mathematical machinery of investigations. Observational cosmology is based not only on astronomical, but also on physical facts. At present, this area of science is associated not only with astrophysics but also to a great extent with mathematics, physics and philosophy. The development of cosmology leads to the creation of Relativistic

Quantum Theory uniting both macrocosmos and microcosmos and the United Field Theory. The science of the Universe as a whole more and more joins the common stream of physical sciences. This tendency, possibly, will lead to transforming cosmology itself.

Another important aspect is the philosophical comprehension of cosmological results. The statement of Stephen Hawking (1988), a prominent cosmologist of our time, should be recollected: "Since most scientists are too busy with the development of new theories describing what the Universe is, and they have no time to ask themselves, why it is. Philosophers whose work is to ask a question 'why' cannot keep up with the development of scientific theories." In other words, the leading cosmologists consider necessary the philosophical comprehension and generalization of cosmological results and methods. S. Hawking continued: "But if we indeed discover the complete theory, then its basic principles will become accessible for understanding of everybody, not only of some specialists, and then we all, philosophers, scientists and common people, will be able to participate in the discussion about why we exist and why the Universe exists. If the answer is found, it will be the complete triumph of human intellect, because the conception of God will become clear for all of us."

When the United Field Theory is created, apparently, it will become a special branch of human knowledge, as well as "3 Social sciences" emerged from "1 Philosophy". In due time the subclass "The Universe. Metagalaxy. Cosmology.", probably, will become the core of a new UDC class and will associate with astrophysics through observations and experiments in the Cosmos.

At present the author suggests transforming the subdivision "524.8 The Universe. Metagalaxy. Cosmology." to a subclass 525. This subclass could embrace theories of cosmology and observational confirmations of cosmological conclusions, as well as relativistic astrophysics and gravitation theory, high-energy and nuclear astrophysics. Such an arrangement would prepare the ground for the right classification of the further development and interaction of these sciences.

In this case the subclass "524 Stars. Stellar systems. The Universe." should naturally be renamed in "524 Stars. Stellar systems. Galaxies."

#### 4. The applied astronomical material

As to compilations of astronomical data, computer-readable atlases and other applied material, possibly, these should be attributed to corresponding subdivisions. For example, 524.314.3 A stars

→ Peculiar A stars → Catalogues of Ap stars → P.Renson (1991) Catalogue General des Etoiles Ap et Am.

These are brief and general comments to the revision of Universal Decimal Classification 52 Astronomy. Of course, the large work done by George Wilkins should be discussed, corrected, and given further detailed consideration by the specialists of different branches of astronomy and physics. Updating UDC 52 should take into account evolution and trends of the sciences in the future. Such processes are clearly for the specialists. Further development of UDC would

carry out successfully and without hitch, if the basic directions are selected correctly.

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### **References**

- Hawking, S. 1988, *A Brief History of Time. From the Big Bang to Black Holes*, (London: Bantam Books)
- Shobbrook R.M. 1995, *Vistas in Astronomy*, 39, 273
- Universal Decimal Classification. International Medium Edition, 1994, (London: British Standards Institution)
- Universal Decimal Classification. Third Soviet Edition (Russian), 1983, (Moscow: Publishing House of Standards)
- Wilkins G.A. 1995a, *Vistas in Astronomy*, 39, 263
- Wilkins G.A. 1995b, Revision of UDC 52 for Astronomy, ASCII files