What analogies with physical sciences are applicable to information transfer processes

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If we consider the various phenomena in information science several analogies with statistically based laws in the physical sciences become apparent. To what extent are the established mathematical models of the physical sciences useful?

Two physical phenomena which may be applicable are rate processes and transmission of radiation.

Analogies of information transfer pathways with these phenomena are discussed and some experimental data to fit the suggested models presented.

Three levels of information science

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Information constitutes an integral component of every field of human activity. It is possible to divide human activity into two main lines:

1. scientific activity/research, and
2. practical activity.

In accordance with this division, it is possible to distinguish:

1. scientific information, constituting a component of research activity, and
2. professional information, which is a component of practical professional activity.

Information science investigates the problems of information under three aspects, as if it were on three levels, namely

Level I - phenomena common for every type of information activity, irrespective of the field with which information processes are associated.

Level II - phenomena characteristic for scientific information or for professional information in general, irrespective of the field of science or profession with which information is associated.

Level III - phenomena characteristic for scientific special information or for professional special information, ie for that connected with particular fields of science or profession.

The author of the paper discusses more comprehensively the research problems of scientific information in general and of special scientific information, taking into account the elements which compose the information activity:

1. human factor, or the operating subjects, ie people engaged in information processes

2. information functions

3. methods and means of operation

4. products of information activity

5. relationship between particular elements of the information process or between sets of elements.

Account is also taken of links between research problems concerning special scientific information and problems concerning the pertinent field of science.