

## ETYMOLOGY OF PHYSICS TERMINOLOGIES

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**E**tyymology refers to a branch of knowledge that deals with the origin of the different words that we use in a particular language. In fact a significant number of words used in any language normally are not indigenous rather have crept in from other languages or have been specially adopted from other languages to describe something that are either new to the language or are very special. For describing the scientific phenomena this adoption of new words indeed is a very common process. For example, the words like ‘cloning’ or AIDS have been accepted as such in different Indian languages and people are using them being completely aware of the significance of the terms though the words are not indigenous. And we have not given much effort to describe these things with the terms from Sanskrit or from any other ancient Indian language. We are rather using the internationally accepted terminologies in these cases. In science and technology this is no doubt convenient.

Incidentally the modern science that we now know has actually reached us through the West and that had incorporated large body of knowledge that had their origin in ancient Greece and Rome as well as in India, China and part of the Arab World. What we had in India, a large chunk of that science, had Sanskrit names of the terms that were in use. The English words that we use in physics have been adopted in a very big way from Greek and Latin. However there are other languages as well those have contributed to the English terminologies used in the field of physics. Often the original meanings of the words have changed though the basic spirit behind the word has remained unchanged. And let us start with the etymology of ‘physics’ itself.

In a way the origin of the word physics can be traced back in a number of European languages. Since the subject basically started dealing with the natural visible world these words actually are close to ‘nature’ in most of their meanings. In Greek we had *phusis* that means ‘nature’ and *phusika* implying ‘natural things’. In Latin the word *physica* refers to the plural number of nature. In English the term *physic* was there to represent ‘physical thing and it pre existed till the time of Galileo but became obsolete after some time. From all these words the subject now known as ‘physics’ started its journey as a branch of natural science in late 16<sup>th</sup> century. That way the term ‘physics’ has emerged as a joint contribution from number of words in different languages possibly reflecting the true spirit behind the team work that has given the subject the present-day shape. From 1715 physics is identified as the ‘science for treating of properties of matter and energy’. And identifying physics from this point of view is in actually an approach that is often presented before the school children first coming across the subject.

Since we are talking about energy we can actually go back to a unit of energy which is now not much used by the physicists but is in use in the field of nutrition. Let us look at the word ‘calorie’ that has come from the Greek word ‘kalog’ meaning heat. No doubt the food we take provide energy to our body through metabolism and in the form of heat and it is very much involved here. Electric circuit is a very familiar thing in our everyday life. The word circuit has come from Latin ‘circuitus’ the meaning of which is ‘going round’. Well, did the people in olden days had any idea of electron that now we know goes round the circuit? The word erg used as the cgs unit of work or energy has come directly come from the Greek word ‘ergon’ meaning work. So like calorie this is a unit for which the word has been borrowed from Greek. One really need not offer any explanation as to why these words were

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adopted and one must appreciate the appropriateness of them.

However the scientific words have also been adopted from other different ancient languages. The word filament is a changed version of the word ‘filum’ that has a Latin origin and the meaning implies a thread. Filaments may not in general be like threads but the word possibly provides us with the right kind of visualization. In a way filaments are constructed from threads. Interestingly, the name laboratory comes from the Latin word ‘laborare’ essentially meaning labour. It goes without saying that the name is significant since one need to put up hard labour in the laboratory to achieve something is science. Moreover the word experiment comes from Latin ‘experiri’ and do you know what it means? The original word in Latin refers ‘to try’, that possibly is the most significant characteristic of an experiment in any field science.

There is no dearth of words whose roots can be traced to old German language. The word grating comes from Germanic word ‘kratzen’ meaning scratch. The way the surface of a piece of glass is systematically and finely scratched to get a diffraction grating the name seems to be perfect. The word ‘lattice’ also comes from Germanic word ‘lath’ meaning strips of wood arranged systematically. The word damping comes from Germanic ‘dampfen’ meaning to choke and the damping we encounter in so many physical situations very nicely traces its root and its original meaning. The well known unit of length in FPS i.e. foot actually is not of English origin but comes from Germanic ‘fot’ meaning a foot and earlier the average length of one foot of an adult person was taken as unit of length. Interestingly other unit of length in FPS i.e. inch also is not of English origin but comes from Latin ‘uncia’ meaning a twelfth part. Some of the other words of Germanic origin are screw (from ‘schruve’), slit (from ‘slita’, meaning to cut away), spin (from ‘spinnen’ meaning to twist fibres together) etc.

Three very interesting terms in optics i.e. reflection, refraction and dispersion have come respectively from the Latin words ‘reflectere’ and ‘refrangere’ and ‘dispergere’. The meanings of the three words in Latin are respectively are to bend back, to break up and to scatter. These are all

**TABLE I (A few physics terms in English with their origin from various languages)**

| Word in English                          | Original source word | Meaning of the original word | Source language |
|--|----------------------|------------------------------|-----------------|
| current                                  | currere              | to run                       | Latin           |
| camera                                   | kamara               | room with arched cover       | Greek           |
| centripetal                              | centrum + petus      | center + seeking             | Latin           |
| cathode                                  | kathodos             | A going down                 | Greek           |
| femto (SI prefix for 10 <sup>-15</sup> ) | femten               | fifteen                      | Danish          |
| gauge                                    | gauger               | Instrument of measurement    | French          |
| pico (SI prefix for 10 <sup>-12</sup> )  | pico                 | A little bit                 | Spanish         |
| friction                                 | ficare               | To rub                       | Latin           |
| equipment                                | skipa                | To arrange ship or man       | Norse           |
| beats                                    | beatan               | To strike repeatedly         | Old English     |
| force                                    | fortis               | strong                       | Latin           |
| pivot                                    | piva                 | A pipe (?)                   | Italian         |
| slug                                     | slugge               | A heavy, slow person         | Norwegian       |
| robot                                    | robotnik             | serf                         | Czech           |
| calibrate                                | qalib+rate           | Mould for casting metal (?)  | Arabic          |

excellent expressions to describe three very old well known phenomena of light as the original words actually take care of the basic characteristics of all the phenomena. This goes to show how intelligently the scientific terminologies were picked up and were adopted by our predecessors.

Some of the terms have actually been derived by combining two suitable words from one language. For example ‘collision’ has comes Latin from col + laedere meaning hurt by striking together. Diameter comes from Greek dia + metron meaning ‘two’ and ‘measure’ separately. This explains when two radii are measured one gets a diameter. Similarly diverge comes from Latin di + verge meaning two + incline indicating the division in two parts. And the word hadron which is a rather late entrant in the physics parlance is composed of hadros + on meaning “thick ones” in Greek.

In India, physics and other science subjects are taught in different Indian languages even upto the UG level. So there are large numbers of scientific terms in different subjects that have been derived mostly from Sanskrit as most of the major Indian languages can trace their roots to Sanskrit. Many physics terms in different Indian languages are the same as they have been derived in a more or less same manner keeping in mind the actual physical process indicated there and the corresponding noun

or verb in Sanskrit. For example the words 'gati' or 'chalan' has been used in most of the major Indian languages to refer to 'kinetic'. Field is referred to as 'kshetra' and charge as 'aadhaan'. There are more such examples. An investigation with the terms in other branches of science is likely to reveal similar interesting collection from various languages. □

## References

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