Physics of elephant

In the second half of the twentieth century, physicists formulated the so-called elephant conjecture, also called Ise's conjecture. It states that given enough parameters one can fit an elephant, and with some more one can make the elephant wag its tail. The true author of Ise's conjecture is not known, however, the conjecture has been repeated many times at many conferences and finally got attributed to Dr. W. Ise of MIT, who was known for having formulated many interesting conjectures; so it seemed logical to attribute this one to him too. Initially, Ise did not object.

Many were mystified by the conjecture, calling it first interesting, then challenging and fascinating, and at some point it has become one of the most important and burning questions in contemporary physics. The breakthrough came when a student of zoology S. Loppy, who was charged with transporting by plane an elephant to the Pittsburgh ZOO, forgot to properly lock the cargo door, and the elephant fell down from high altitude creating an impressive crater in the Mohave Desert. Feeling guilty, the student promptly traveled to the crash site and measured the diameter and depth of the crater to be 10.5 and 2.2 meters, respectively. His seminal paper on the "First measurement of elephant by a high-energy collision" was immediately accepted for publication in Physical Review Letters.

Before the physics community had a chance to ponder on the significance of this measurement, Professor M. Ensa of Princeton, who met Loppy on his return flight to Pittsburgh, formulated the first model of the elephant, and managed to publish it back-to-back with Loppy's article. The model described the elephant as a sphere of diameter of 7.2 meters and mass of 5 metric tons. These two parameters described Loppy's data beautifully.

A possibility of using similar experimental set-up to better establish properties of the elephant was immediately realized in several scientific centers. Important research programs were started, grants were awarded, and systematic observations of el-craters, as they were now called, were pouring into scientific journals. In experiments, the intensity of elephant beams was customarily measured in MA (mega amperes) with a proviso that the elephant before discharging was charged with one electrical shock of 110V during 1 second. Translation tables to units using European voltage of 220V were also published.

A substantial grant awarded within the European FP137 program allowed for a construction of the multi-laser device (MLD) to observe whether the elephant is hitting the ground headfirst or tail-first. After a short, but heated discussion, about including the Physics of elephant in Physical Review E, which seemed like a very logical step, the APS opted for a creation of a new section F. One of the principal subsections in this journal was named "Multifragmentation".

With the accumulated large body of experimental observations, Ise's conjecture could now be put to a stringent experimental test. The first model of the elephant, using very many parameters, was created within the research program sponsored by SONY, and described the surface of the elephant with a fantastic resolution of 72 dpi and later even 300 dpi. Millions and next billions of parameters were adjusted to the experimental results obtained for el-craters. Very advanced statistical methods to look at confidence levels were applied in collaboration with mathematicians, and finally it became clear that Ise's conjecture has been proven false. The article on that issue entitled "Ise proved wrong" was published in the New

York Times. At this point Ise issued a statement saying that he, in fact, never formulated the conjecture.

Since results of measurements of el-craters were made available on the Internet, many scientists and science aficionados attempted to confront the fascinating question: What the elephant really is? One of such persons was Dr. W.H. Ale who felt an intriguing affinity to the elephant and realized that Ensa's model corresponded to the first term in a multipole series for elephant's mass distribution. Very soon he was able to formulate an advanced model by using multipoles up to the order of 300 and next 500, which also contained millions of parameters. He invented his own judicious fitting procedure, adjusted elephant's multipole moments to data and obtained good results. He was even able to understand the physical origin of the so-called elephant jets and proved that they must originate from the rear end of the elephant. Based on his analyses, Ale was able to put forward a daring hypothesis that four large heavy appendices protrude from one side of the elephant. In support of that, he produced fuzzy 3D computer-generated images of elephant's mass distribution.

Despite its success, Ale's work has not gained much appreciation within the broad community, which seemed to be emotionally attached to Ise's conjecture. His work was promptly qualified as "just fitting many parameters", "lacking physical understanding", or outright "stupid". Ale tried to argue that the elephant is a fairly complex object and, therefore, precise description of high-resolution experiments must involve many parameters. To no avail; when the directors of experimental facilities announced: "the elephant has been understood", the Nobel Committee honored the achievement and work of Ise, Loppy, and Ensa (Ise promptly issued a statement saying that he finally does recall having formulated his conjecture). Ale died in solitude after many years of untreated depression. However, his model is still widely used in the Ale Research Center, named after him, which now studies other large mammals.

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