The Techi’s Talks

Message from the Desk of The Principal

The publication of the Technical Electronic-Bulletin “The Techi’s Talks” is continued in the Vidyalaya, with the mission to provide an environment of creativity & learning with fun to the students.

We are trying to transform our students into future world leaders by providing them non-stop learning atmosphere. By taking small projects at school level and participating in Regional and National Competitions, they are becoming more innovative, good team members, developers & effective communicators. They are striving for continuous improvement of constant pursuits for excellence.

The process is long but we are determined to our professional accomplishments.

How can I miss the opportunity on this occasion to show my heartfelt gratitude towards our KVS visionaries, specially to Dr. Jai deep Das, Deputy Commissioner, KVS, Agra Region for the continuous guidance, help and motivation.

Awaiting your responses and suggestions for future issues.

(Munendra Singh)
Principal

In the present IT era, the changes take place at a very alarming rate. This e-Bulletin is an effort in the direction to provide students as well as teachers, a platform of expression and a source of information in order to keep themselves updated to walk in pace with the modern technical world.

Also this is an effort to deviate the young minds from mere computer gaming to using it as a resource for creativity and knowledge exploration.

Eagerly waiting for your suggestions for implementation in future.

(M. P. Singh)
PGT Computer Science

Special points of interest:

- NANOTECHNOLOGY
- Quantum Vibrations
- GOOGLE: The success story......
Three planets were discovered, two orbiting stars similar to the Sun and one orbiting a more massive and evolved red giant star. The first two planets both have about one third the mass of Jupiter and orbit their host stars in seven and five days respectively. The third planet takes 122 days to orbit its host and is more massive than Jupiter. The first of these planets proved to be orbiting a remarkable star -- it is one of the most similar solar twins identified so far and is almost identical to the Sun [5]. It is the first solar twin in a cluster that has been found to have a planet. Two of the three planets are "hot Jupiters" -- planets comparable to Jupiter in size, but much closer to their parent stars and hence much hotter. All three are closer to their host stars than the habitable zone where liquid water could exist.

"These new results show that planets in open star clusters are about as common as they are around isolated stars -- but they are not easy to detect," adds Luca Pasquini (ESO, Garching, Germany), co-author of the new paper [6]. "The new results are in contrast to earlier work that failed to find cluster planets, but agrees with some other more recent observations. We are continuing to observe this cluster to find how stars with and without planets differ in mass and chemical makeup."

Birthday magic

Step1: Add 18 to your birth month.
Step2: Multiply by 25.
Step3: Subtract 333.
Step4: Multiply by 8.
Step5: Subtract 554.
Step6: Divide by 2.
Step7: Add your birth date.
Step8: Multiply by 5.
Step9: Add 692.

First planet found around solar twin in star cluster

First planet found around solar twin in star cluster

Ajeet Singh XI A

Birthday magic

A Mathematical trick to know your Date of Birth

Chetan Gupta XI A

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Chetan Gupta XI A
The Nobel Prize in Physics 2013 was awarded jointly to François Englert and Peter W. Higgs "for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider"
A review and update of a controversial 20-year-old theory of consciousness published in *Physics of Life Reviews* claims that consciousness derives from deeper level, finer scale activities inside brain neurons. The recent discovery of quantum vibrations in "microtubules" inside brain neurons corroborates this theory, according to review authors Stuart Hameroff and Sir Roger Penrose. They suggest that EEG rhythms (brain waves) also derive from deeper level microtubule vibrations, and that from a practical standpoint, treating brain microtubule vibrations could benefit a host of mental, neurological, and cognitive conditions. The theory, called "orchestrated objective reduction" ("Orch OR"), was first put forward in the mid-1990s by eminent mathematical physicist Sir Roger Penrose, FRS, Mathematical Institute and Wadham College, University of Oxford, and prominent anesthesiologist Stuart Hameroff, MD, Anesthesiology, Psychology and Center for Consciousness Studies, The University of Arizona, Tucson. They suggested that quantum vibrational computations in microtubules were "orchestrated" ("Orch") by synaptic inputs and memory stored in microtubules, and terminated by Penrose "objective reduction" ("OR"), hence "Orch OR." Microtubules are major components of the cell structural skeleton. Orch OR was harshly criticized from its inception, as the brain was considered too "warm, wet, and noisy" for seemingly delicate quantum processes. However, evidence has now shown warm quantum coherence in plant photosynthesis, bird brain navigation, our sense of smell, and brain microtubules.

The recent discovery of warm temperature quantum vibrations in microtubules inside brain neurons by the research group led by Anirban Bandyopadhyay, PhD, at the National Institute of Material Sciences in Tsukuba, Japan (and now at MIT), corroborates the pair's theory and suggests that EEG rhythms also derive from deeper level microtubule vibrations. In addition, work from the laboratory of Roderick G. Eckenhoff, MD, at the University of Pennsylvania, suggests that anesthesia, which selectively erases consciousness while sparing non-conscious brain activities, acts via microtubules in brain neurons.

"The origin of consciousness reflects our place in the universe, the nature of our existence. Did consciousness evolve from complex computations among brain neurons, as most scientists assert? Or has consciousness, in some sense, been here all along, as spiritual approaches maintain?" ask Hameroff and Penrose in the current review. "This opens a potential Pandora's Box, but our theory accommodates both these views, suggesting consciousness derives from quantum vibrations in microtubules, protein polymers inside brain neurons, which both govern neuronal and synaptic function, and connect brain processes to self-organizing processes in the fine scale, 'proto-conscious' quantum structure of reality."

After 20 years of skeptical criticism, "the evidence now clearly supports Orch OR," continue Hameroff and Penrose. "Our new paper updates the evidence, clarifies Orch OR quantum bits, or "qubits," as helical pathways in microtubule lattices, rebuts critics, and reviews 20 testable predictions of Orch OR published in 1998 -- of these, six are confirmed and none refuted."

An important new facet of the theory is introduced. Microtubule quantum vibrations (e.g. in megahertz) appear to interfere and produce much slower EEG "beat frequencies." Despite a century of clinical use, the underlying origins of EEG rhythms have remained a mystery. Clinical trials of brief brain stimulation aimed at microtubule resonances with megahertz mechanical vibrations using transcranial ultrasound have shown reported improvements in mood, and may prove useful against Alzheimer's disease and brain injury in the future.

Manoj Rawat PGT Physics)
NANOTECHNOLOGY: what is it and how it is?

Nanotechnology is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications. Encompassing nanoscale science, engineering, and technology, nanotechnology involves imaging, measuring, modeling, and manipulating matter at this length scale.

Matter such as gases, liquids, and solids can exhibit unusual physical, chemical, and biological properties at the nanoscale, differing in important ways from the properties of bulk materials and single atoms or molecules. Some nanostructured materials are stronger or have different magnetic properties compared to other forms or sizes or the same material. Others are better at conducting heat or electricity. They may become more chemically reactive or reflect light better or change color as their size or structure is altered.

A nanometer is one-billionth of a meter. Find out just how tiny that actually is. Special high-powered microscopes have been developed to allow scientists to see and manipulate nanoscale materials. Learn about those microscopes here. Learn how scientists can carefully create, control, move, and change materials at the nanoscale.

Benefits and Applications

After more than 20 years of basic nanoscience research and more than a decade of focused R&D under the NNI, applications of nanotechnology are delivering in both expected and unexpected ways on nanotechnology’s promise to benefit society.

Nanotechnology is helping to considerably improve, even revolutionize, many technology and industry sectors: information technology, energy, environmental science, medicine, homeland security, food safety, and transportation, among many others. Described below is a sampling of the rapidly growing list of benefits and applications of nanotechnology.

Fibre optics technology

This article discusses the history of fiber optics, from the optical semaphore telegraph to the invention of the first clad glass fiber invented by Abraham Van Heel, applications and different uncharacteristic of Fiber Optics. Today more than 80 percent of the world’s long-distance voice and data traffic is carried over optical-fiber cables.

Fiber-Optic Applications—Telecommunications applications of fiber-optic cable are widespread, ranging from global networks to desktop computers.

Fiber-optic cables are constructed of three types of materials: glass, plastic, and plastic-clad silica (PCS). Propagation Modes—There are two main modes of fiber-optic propagation: multimode and single mode.
These two modes perform differently with respect to both attenuation and chromatic dispersion.

Fiber-Optic Characteristics—Fiber-optic system characteristics include linear and nonlinear characteristics. Linear characteristics include attenuation and interference. Nonlinear characteristics include single-phase modulation (SPM), cross-phase modulation (XPM), four-wave mixing (FWM), stimulated Raman scattering (SRS), and stimulated Brillouin scattering (SBS).

Fiber Types— it has various multimode and single-mode fiber types currently used for premise, metro, aerial, submarine, and long-haul applications.

Fiber-Optic Cable Termination—Removable and reusable optical termination in the form of metal and plastic connectors plays a vital role in an optical system

Mahendra Pratap Singh
PGT (CS)
-Courtesy:-
The google-e-books
Short Message Service (SMS): today’s fashion

Short Message Service (SMS) is a text messaging service component of phone, web, or mobile communication systems, using standardized communications that allow the exchange of short text messages between fixed line or mobile phone devices. SMS text messaging is the most widely used data application in the world, with 3.6 billion active users, or 78% of all mobile phone subscribers. The term "SMS" is used as an acronym for all types of short text messaging, as well as the user activity itself, in many parts of the world. SMS is also being used as a form of direct marketing known as SMS marketing.

The first SMS message was sent over the Vodafone GSM network in the United Kingdom on 3 December 1992, from Neil Papworth of Sema Group (now Mavenir Systems) using a personal computer to Richard Jarvis of Vodafone using an Orbitel 901 handset. The text of the message was “Merry Christmas.”

The first commercial deployment of a short message service center (SMSC) was by Aldiscon part of Logica (now part of Acision) with Telia (now TeliaSonera) in Sweden in 1993, followed by Fleet Call (now Nextel) in the US, Telenor in Norway and BT Cellnet (now O2 UK) later in 1993. All first installations of SMS gateways were for network notifications sent to mobile phones, usually to inform of voice mail messages. The first commercially sold SMS service was offered to consumers, as a person-to-person text messaging service by Radiolnja (now part of Elisa) in Finland in 1993. Most early GSM mobile phone handsets did not support the ability to send SMS text messages, and Nokia was the only handset manufacturer whose total GSM phone line in 1993 supported user-sending of SMS text messages.

Initial growth was slow, with customers in 1995 sending on average only 0.4 messages per GSM customer per month. One factor in the slow takeup of SMS was that operators were slow to set up charging systems, especially for prepaid subscribers, and eliminate billing fraud which was possible by changing SMSC settings on individual handsets to use the SMSCs of other operators. In 2010, 6.1 trillion SMS text messages were sent. This translates into 193000 SMS per second. SMS has become a massive commercial industry, earning $114.6 billion globally in 2010. The global average price for an SMS message is $0.11, while mobile networks charge each other interconnect fees of at least $0.04 when connecting between different phone networks.

Kumari Shivani IX A
Google was created in 1996 by two Stanford university students – Larry Page and Sergey Brin. They created it as a research project for their PhD degree. These two bright students came up with an idea to create a universal search engine that would compare internet sites by the relationships between them and other sites on the World Wide Web. Page and Brin originally nicknamed their new search engine “BackRub”, because the system checked backlinks to estimate the importance of a site. Eventually, they change the name to Google, which was from the misspelling of the name googol, which means the number 1 followed by 100 zeros. Google originally started running at the university’s domain google.stanford.edu.

The company was incorporated in 1998 September 4 (at a friend’s garage by the way).Google was incorporated in 1998 ... at a garage.

At the early stages of Google corporation, it has received various funding starting with 100,000 $ funding from Andy Bechtolsheim in 1999. On June 7, 1999, a $25 million round of funding was announced, with major investors including the venture capital firms Kleiner Perkins Caufield & Byers and Sequoia Capital. This funding has triggered the growth of the Google Corporation. The following year, the creators of Google created advertising system, which advertised various search keywords. This system is one of the major reasons behind the success of Google.

During the following years Google bought many famous companies and extended its partnership. In 2004, Google acquired Keyhole, Inc. The result of this partnership was Earth Viewer that gave a 3-D view of the Earth. Google renamed the service to Google Earth in 2005. Two years later, Google bought YouTube for $1.65 billion. In 2007 Google purchased Grand Central for $50 million. In addition Google has many partners all around the world. It’s hard to believe but Google is even a partner of NASA.

Today Google is as famous as the internet. Google holds the monopoly of internet search engines and offers various services starting with online translators ending with Google Maps. Recent development of the company shows that Google Corporation has a bright future ahead.

SOMESH KUMAR BHASKAR
12th A