Newspaper Clips

March 18, 2012

Financial Express ND 18/03/2012 P-10

Adding a twist to radio technology

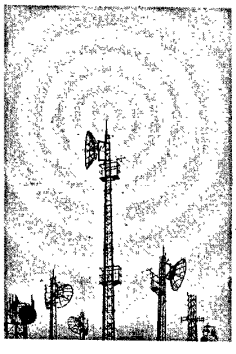
Researchers have solved the problem of radio congestion by twisting radio waves, allowing for a potentially infinite number of channels to be broadcast and received

Edwin Cartlidge

THE BANDWIDTH available to mobile phones, digital television and other communication technologies could be expanded enormously by exploiting the twistedness as well as wavelength of radio waves. That is the claim being made by a group of scientists in Italy and Sweden, who have shown how a radio beam can be twisted, and the resulting vortex detected with distant antennas.

The simplest kind of electromagnetic beam has a plane wave front, which means that the peaks or troughs of the beam can be connected by an imaginary plane at right angles to the beam's direction of travel. But if a beam is twisted, then the wave front rotates around the beam's direction of propagation in a spiral, creating a vortex and leaving the beam with zero intensity at its centre.

Physicists have been able to create twisted beams of visible light for about 20 years, having initially noticed that such beams were being produced inside some laser cavities. These twisted beams of light are useful in nanotechnology, as optical "tweezers" or "spanners" to manipulate tiny particles. To date, however, no-one has attempted to do the same thing at the radio wavelengths used in telecommunication.



SPIRAL WAVES

Now, a group led by Bo Thide of the Swedish Institute of Space Physics in Uppsala and Fabrizio Tamburini of the University of Padua, Italy, has succeeded in twisting the waves emitted by the type of antenna used by standard wireless routers to transmit data over long distances. The team did this by reflecting the waves off an eight-stepped, spiral-staircase-like structure positioned a couple of meters from the antenna, the axis of which lined up with the beam. The idea was that different sections of the wave front would bounce off different steps, introducing a delay between the reflection of neighboring sections and so causing the wave front to become twisted and take on the shape of the reflector.

To prove that they really had twisted the beam, Thide and his colleagues measured the beam's intensity with a pair of antennas 7 metres away. They found that the combined intensity from the two antennas varied as they kept one fixed and moved the other around in a plane at right angles to the beam. This, they point out, is what would be expected if different portions of the wave front traverse the plane at different times. The signals registered by the two antennas would be in-phase (that is, two peaks or two troughs), out of phase or somewhere in between depending on their relative orientation. The intensity pattern more or less matched that predicted by a computer simulation of the propagating twisted beam.

SCIENTISTS THINK THAT THE BANDWIDTH AVAILABLE TO MOBILE PHONES AND LAPTOP COMPUTERS COULD BE INCREASED BY A FACTOR OF NINE ALMOST IMMEDIATELY, AND AT RELATIVELY LITTLE EXTRA COST

Thide, Tamburini and others recently showed how this detection scheme, carried out using radio telescopes, could identify the tell-tale twisted radiation from spinning black holes. But Tamburini thinks it could also have "revolutionary" implications for radio communications. He envisages that just as waves of different frequencies can propagate together without interference—thereby multiplying the number of signals that can be sent between an emitter and a receiver—so too could bandwidth be expanded by simultaneously transmitting waves with the same frequency but different degrees of twistedness.

The next important milestone will be the demonstration of twisted radio transmission in noisy, real-world conditions—so far the experiments have been done in an electromagnetically and acoustically insulated room at the University of Uppsala. The researchers hope to start testing a partially spiraled satellite dish within the next few days, then to use a similar device to transmit a twisted radio beam several hundred metres across the lagoon in Venice three months from now.

Tamburini thinks that the bandwidth available to mobile phones and laptop computers could be increased by a factor of nine almost immediately, and at relatively little extra cost, by carefully positioning four antennas inside the devices. He estimates that this technology could enter the market within the next two to five years. Technological improvements could make even more bandwidth available.

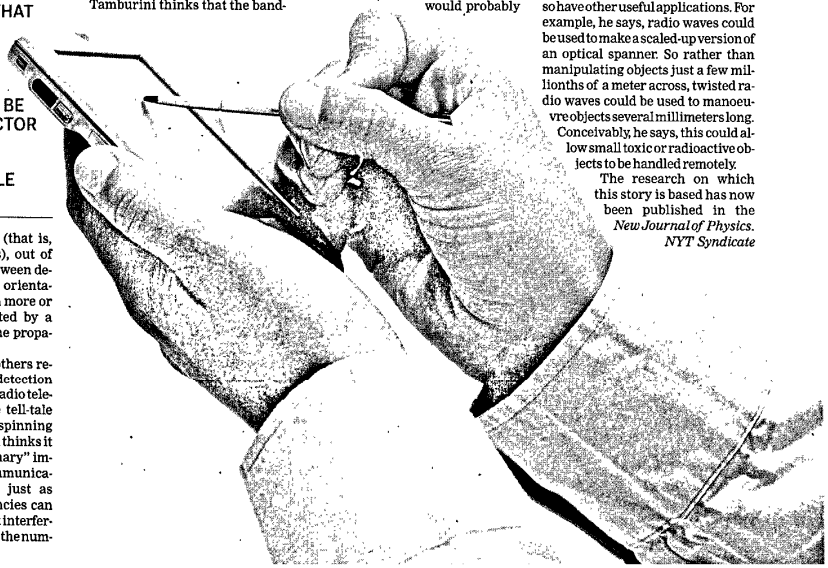
Taco Visser, an electrical engineer at Delft University of Technology in the Netherlands, thinks that twisted radio beams would "certainly increase capacity" in telecommunication channels. But he cautions that atmospheric turbulence, which causes fluctuations in the amplitude and phase of a signal, would probably limit the extent to which beams could be twisted and therefore restrict the number of available channels. He also says it is not clear how portable devices such as mobile phones could emit such twisted beams, because each channel would require its own spiral reflector.

However, Tamburini says that he has devised a scheme in which individual spiral reflectors are not needed. He has shown in a simulation that this scheme works and is now looking to build a prototype system and patent it, adding that the most complicated aspect is how to send and recieve twisted beams from a device when it is moving about.

Visser says that the work could also have other useful applications. For example, he says, radio waves could be used to make a scaled-up version of an optical spanner. So rather than manipulating objects just a few millionths of a meter across, twisted radio waves could be used to manoeuvre objects several millimeters long. Conceivably, he says, this could allow small toxic or radioactive objects to be handled remotely.

The research on which this story is based has now been published in the *New Journal of Physics*.

NYT Syndicate



Publication: The Times Of India Delhi;Date: Mar 18, 2012;Section: Front Page;Page: 1

Warwick B-school eyes Delhi campus

Hemali Chhapia | TNN

Mumbai: The Warwick Business School, standing 130km from London, will have its second address in India. The headquarters in the UK may be in sparsely populated Coventry but the management institute is looking at bustling Delhi for its new campus.

The school's core will be research, around which

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teaching will be designed, said Warwick dean Mark Taylor. "What we will produce here will be the same as what we produce on the main campus," he added.

Ever since India spoke of opening its doors to foreign universities, several top institutions have eyed its shores, but few have actually taken a step. The Schulich School of Business of Canada's York University is building its campus in Hyderabad.

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Research focus of Warwick's Delhi move

Hemali Chhapia | TNN

Mumbai: The Warwick Business School (WBS) of UK is looking at Delhi to set up its Asia campus, with the teaching centred around research. Like the Schulich School of Business of Canada's York University that set up base in Hyderabad, Warwick is looking at advancing what it has already built in the UK.

Warwick is working with the Batra Group, headed by a family that sent many of its children to Warwick for an education.

"We have ordered a feasibility study for the project from a consultancy firm which is looking at several issues like the location to set up the school and other things that the project entails, including the areas that are important for the growth and development for this part of the world, for our Asia campus that will be located in India," said WBS dean Mark Taylor, an Oxonian.

> Warwick is working with the Batra Group, headed by a family that sent many of its children to Warwick

Most other universities that have set up India offices assist and attract prospective students, tap into the colleges' alumni, build relations with large Indian conglomerates, run short programmes for executives or act as research centres that collect raw material on an emerging economy and a maturing market called India. "The Warwick school will not be a data collection centre that will procure data and transport a bag to the main campus," said WBS' associate dean Qing Wang.

Over a decade ago, Warwick was undoubtedly one of the finest schools in the UK to study business, but it has slipped not just in ranking, but also in students' preferences. In 2009 came its low point when funding was cut based on a UK government Research Assessment Exercise, in which Warwick was trumped by both Cardiff and Manchester business schools.

Soon after, Taylor took the reins of the school and it swung back to a better place in global rankings. "It is important to keep the academic rigour high, bring in first-grade practitioners to teach and ensure that there is application of research," said Taylor.

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Suicide: AIIMS to pay kin ₹15L

New Delhi: The All India Institute of Medical Sciences (AIIMS) will give a monetary support of Rs 15 lakh to the family of Anil Kumar Meena, first year MBBS student who committed suicide at the campus on March 3. The decision was taken on Friday in the standing finance committee meeting of the institute. "We will give Rs 10 lakh in cheque and the rest of the amount will be deposited in the nearest bank as fixed-deposit," said a spokesperson. Former UGC chairman Sukhadeo Thorat will visit the campus next week, he added. TNN

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Einstein proved right in retest of neutrinos' speed

Geneva: Einstein may have been right after all. European researchers said on Friday they had measured again the speed of a subatomic particle that a September experiment suggested traveled faster than the speed of light, violating Einstein's special theory of relativity, which underlies much of modern physics.

The research team, led by Nobel Prize-winning physicist Carlo Rubbia, found that the particles, neutrinos, do not travel faster than light. Rubbia's team, called 'Icarus', measured the speed of neutrinos fired from CERN, the European Organization for Nuclear Research, in Switzerland, to a detector 453 miles away in Italy.

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VINDICATED: Albert Einstein

"The results are very convincing," Rubbia said, "and they tell us essentially that there was something not quite right with the results of Opera." Opera was the team which reported in Sept that its tests appeared to show neutrinos speeding faster than light, prompting widespread disbelief among scientists.

Einstein's theory of relativity, a pillar of modern physics, says nothing in the universe can travel faster than the speed of light in a vacuum, approximately 186,282 miles per second. That speed factors into all kinds of calculations, from estimates about the size and age of the universe to the radius of black holes. Doubts about Opera results were heightened last month when researchers said they had found a flaw in the technical setup that could have distorted the experiment's figures. AP

HindustanTimes
Title : Gangaram Hospital to launch a post-graduate institute
Author :
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Gangaram Hospital to launch a post-graduate institute

NEW DELHI: To boost research and aid post-graduate education, Sir Ganga Ram Hospital (SGRH) is launching Ganga Ram Institute of Postgraduate Medical Education and Research (GRIPMER) on Sunday.

"We lay a lot of emphasis on academics and research besides having a big share in patient care in the country," said Dr DS Rana, chairman, board of management at Gangaram Hospital.

"About 75 research projects are in progress and over 250 research papers are published every year, 70 of these in indexed journals," said Dr NK Ganguli, chairperson, research. Dr Samiran Nundy will be the dean (designated) at GRIPMER.

The hospital has been recognised as a research centre by the department of science and technology.

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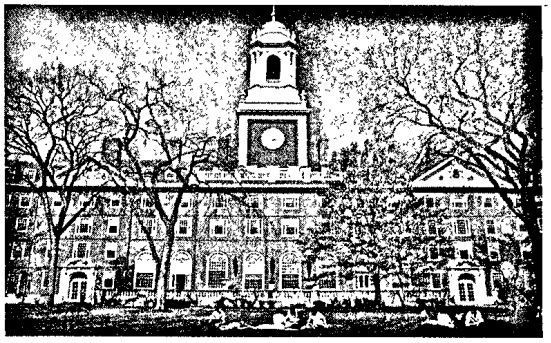

Hi Harvard, why Harvard?

What do our B-schools have to say about the executive education programmes being launched here by their foreign counterparts?

Shobha John | TNN

When 50-year-old Rajendra Singh, a top honcho in a technology company, wanted to burnish his repertoire of skills, he went to one of the best management schools. His company spent Rs 32 lakh for him to do an eight-week advanced executive management course at Harvard. "I know it seems like a great deal. But what I learned in terms of education was incomparable," says Singh. This education just got closer home with the recent launch of a Harvard classroom at Taj Lands End in Mumbai.

While it's a quid pro quo for Indian students and renowned foreign management institutes, be it Harvard Business School (HBS), Wharton or Kelloggs which have arrived in India, will it make a dent on the brand value of the IIMs?

"IIMs will continue to be aspirational for India's top students. Why, many get into Ivy League colleges and don't get a foothold into the IIMs," says Debashis Chatterjee, IIM-Kozhikode director. "This is a brand we have built assiduously. Harvard sees India as a market, whereas the IIMs don't see education as a market."

Strong words, but it's true that foreign courses don't exactly come cheap. While a 4-5 day Harvard executive education course costs around Rs 2 lakh and each course of Wharton is more than Rs 1.6 lakh, IIM-Bangalore offers a five-day course for Rs 75,000.

Nonetheless, Harvard and Wharton have marketed their executive education courses as exclusively meant for India (see box). Harvard has even replicated its classrooms in Boston in Mumbai with amphitheatre-style architecture. "Unlike the traditional ballroom-type of classroom where all the students sit at one level, this amphitheatre helps in Harvard's case study method," says Rohit Deshpande, Sebastin S Kresge professor of marketing, HBS. This participant-centred learning needs the instructor to facilitate debate by walking up and down the aisles, rather than the traditional Aristotelian method where the teacher instructs and the students listen.

Despite accusations of pecuniary motives driving these schools here, India remains vital for their global strategy. "This century is the century of Asia, and India is an emerging superpower. For many of my students at Harvard, India is the California of the 21st century," says Deshpande.

Wharton came to India in January, offering three executive educative programmes in Mumbai and Gurgaon. A fourth will be added later this year. Vice-dean Jason Wingard says this is the ideal time for an India entry. "We offer career coaching and professional career assessment too," he says. "Wharton will help Indian business leaders with up-to-the-minute research and best practices." Its vice-dean of global initiatives Harbir Singh says there's "a growing emphasis on internationalisation in India. You can't maintain a competitive advantage without a global perspective."

So will the IIMs change their strategy? No, says Chatterjee. "IIMs have their own system which is sensitive to changing global scenarios and is independent of what's happening elsewhere. Foreign universities will have to change according to the Indian scenario."

Alex Manappurathu, chief programme officer at IIM-Bangalore, says they won't change as a reaction to competition either. "Our programmes are derived from the research, teaching and consulting work done by our faculty which is actively involved in latest business realities on a global basis," he says. "Further, IIM-B's executive programmes are among the largest in the Asian Executive Education segment."

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INDIA CALLING

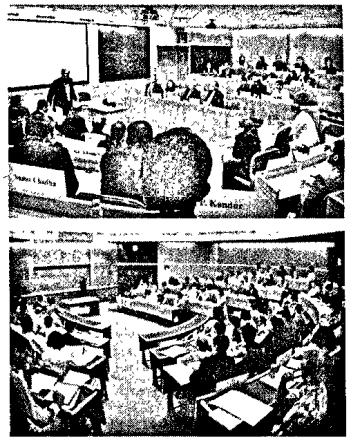
What's on the executive menu?

HARVARD BUSINESS SCHOOL:

- Managing & Transforming Professional Service Firms
- Building a Global Enterprise in India
- Develop India: Real Estate Strategies for Growth

WHARTON:

- Customer Driven Marketing: Strategies for Profitable Growth
- Strategic Thinking and Leadership for Growth
- Using Finance for Strategic Growth



BETTER THAN THE REAL THING? A Harvard classroom (above) and a Harvard classroom in India (top)

Maha babus out to teach basics

Prafula Marpakwar | TNN

Mumbai: High ranking bureaucrats — housing secretary Gautam Chatterjee, his higher and technical education counterpart Sanjay Kumar and UID deputy director general Ajay Bhushan Pandey will soon embark on a novel mission. The trio has drafted an ambitious plan to teach basic subjects to non-performing students.

Chatterjee, an IAS officer of the 1982 batch was a topper in physics from Patna, Sanjay Kumar, an IAS officer of the 1984 batch, did his schooling from Bihar and later did his post-graduation in political science from the prestigious JNU, while Pandey, an IAS officer of the 1984 batch is a product of the IIT, Kanpur and later, he did his post doctoral research in computer science from the states.

Prior to his appointment in the higher and technical education department, Sanjay Kumar had a prolonged stint with the school education department. Sanjay Kumar found that there was steady rise in the number of drop outs and in addition, quite a large number of students did not succeed at the SSC examination owing to their inability to attempt maths, science and English question papers. They felt that since they have a little expertise and liking for teaching, they should guide the students, particularly belonging to weaker sections of the society. In the corridors of power, Chatterjee, Pandey and Sanjay Kumar are known for their efficiency and integrity. "We are drafting the plan, its in conceptual stage, but we are sure, we will be able to launch it on a very smaller scale from the ensuing academic session," a bureaucrat told TOI on Saturday.

Secondly, it has been proposed to teach only three subjects, English, mathematics and science. "We know most of the students are weak in these subjects, therefore, it was felt that we should concentrate only on English, mathematics and science," he said.

The bureaucrat, said it was an experiment first of its kind, if they succeed and results are encouraging, then it has been proposed to rope in more like-minded bureaucrats.

7- MEMBER PANEL FOR NIT FACULTY PAY REVISION

18 Mar 2012, The Asian Age, NEW DELHI, MARCH 17

The Union human resources development ministry has constituted a seven- member special committee to look into the career advancement issues and anomalies in revision of pay of the faculty members in National Institutes of Technology.

Sources stated that the committee, headed by special secretary (technical education) of the HRD ministry, has been mandated to examine the issue in detail and make recommendations to address the issues arising out of recommendations of a committee, headed by Prof S. K. Sarangi, director NIT, Rourkela.

Constituted by the HRD on March 2, 2010, the Sarangi Committee was formulated to look into the subject of removal of anomalies in the implementation of the Sixth Central Pay Commission recommendations for the NIT faculties.