

# A new approach

**Michael Banks** travels to Shanghai to hear how the physics department at the first Sino-US joint-venture university is looking to expand

“China was the obvious choice,” says Daniel Stein, a physicist at New York University (NYU) who served as dean of science there from 2006 to 2012. “It needed to be the country that we expanded into.” Created in 1831, NYU has a sprawling campus in Manhattan with its core in Greenwich Village. But as the institution, which is a liberal-arts university, entered the 21st century, it brought with it ambitions to create a truly global university.

Many other western institutions have outposts in other countries – mainly to attract new students – and NYU is no exception, having a dozen “centres” worldwide. But NYU wanted to do something different, and in 2010 it opened a new style of institution in Abu Dhabi. Dubbed NYU Abu Dhabi, it is, to some extent, independent from NYU, and offers its own degree programmes. The university now has more than 1000 students and the physics department, consisting of nine faculty members, is an international partner in the XENON1T dark-matter experiment at the Gran Sasso Laboratory in Italy.

Following Abu Dhabi’s success, NYU turned its attention to Asia, and in 2013 – with support from China’s higher-education ministry and the Shanghai local government – created NYU Shanghai. Like its counterpart in Abu Dhabi, NYU Shanghai is its own independent university with the ability to grant degrees. It also represents the first Sino-US joint-venture university. NYU Shanghai has its own 15-storey campus building – dubbed the Academic Centre – that is located in east Shanghai. The university boasts 15 research institutes, most of which are partnered with the East China Normal University (ECNU) in Shanghai.

One of those institutes is the NYU–ECNU Joint Institute of Physics, which is not located at the Academic Centre but on the ECNU’s campus in the west of the city. Opened in 2014, it currently has five physics faculty members who are doing research in quantum information, condensed-matter physics, atomic and molecular physics and fluid physics. NYU

## Joining forces

New York University has teamed up with the East China Normal University to create the NYU–ECNU Joint Institute of Physics.



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Shanghai also has about 1200 undergraduate students – 49% of whom are from outside China. Of these 1200 students, around 40 are doing science, four of whom have just graduated (the first batch of students received their degrees in May). “If you’re a physics undergraduate, you have access to faculty at three institutions – NYU, NYU Shanghai and the joint institute – and that’s a great benefit,” says Stein, a theoretical physicist who is co-director of the NYU–ECNU Joint Institute.

NYU Shanghai students are awarded two degree certificates – one from NYU and the other from NYU Shanghai. A unique feature of this initiative is that it allows students from Shanghai to spend a year in New York, Abu Dhabi, or one of the other dozen or so centres. While such periods are optional, it is encouraged, and indeed many students take up the opportunity, mainly in the third year of their degree programme.

Physicist Guixiang Huang, who served as chairman of ECNU’s department of physics from 2012 to 2016 and is now co-director of the NYU–ECNU Joint Institute, says that the move to create NYU Shanghai signals that China is open to reforming its education system. “There is a thirst in ECNU to improve higher education,” says Huang, who from 2012 to 2016 was associate director of the Key State National Laboratory for Precision Spectroscopy at the ECNU, which contains around 20 labs focusing on areas such as high-precision optical spectroscopy. “But the NYU–ECNU Joint Institute of Physics is not just about that, but also to

improve collaborative research.”

Quantum theorist Tim Byrnes was among the institute’s first faculty hires. With a PhD from the University of New South Wales in Sydney, Australia, he spent a decade in Japan before moving to NYU Shanghai. Byrnes says the strength of the ECNU’s research into atomic, molecular and optics physics – performed mostly at the Key State lab – was what attracted him to Shanghai. He is a recipient of the 1000 Talents programme, which is designed to attract researchers to China, and also has a joint position in the Key State lab. “China has been successful attracting people to spend a short time here, but to have full-time people from abroad is a rare thing,” he says. “This is why NYU Shanghai is different.”

Byrnes can apply for grants from Chinese funding agencies and NYU Shanghai faculty also have lab space at the ECNU. Stein adds that this shows that ECNU officials are fully behind NYU Shanghai. “The most valuable resource is space, and as we are located in a building that is prime real estate, that is a sign that the ECNU is putting its money where its mouth is,” says Stein. “I think this also shows that NYU chose the right partner, as some other universities might be reluctant to provide space.”

While the physics department at NYU Shanghai is small, it is set to expand, with the department currently setting up a postgraduate programme. “Graduate programmes are new to NYU partner universities,” says Stein. “But you are not going to have a successful physics department without a good graduate programme.” The physics department is also offering an internship programme where PhD students can come and spend up to six months at NYU Shanghai as part of their degree. According to Byrnes, it is “extremely popular” with students eager not only to learn new physics but also about China and Shanghai. “We have been trying to create activity and a buzz,” says Byrnes. “That will then attract more undergraduates to eventually choose physics.”

While it is still early to say whether the joint institute will be a success, it’s certainly heading in the right direction, helped by support from the Chinese government. “I am encouraged by the commitment shown by all parties,” says Stein. “After all, the NYU and the ECNU can do much more together than what we can do separately.”

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