

Colloquium

The First Nuclear Reactors

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December 02, 1942 was a day of unique significance for nuclear energy – on this date, man achieved for the first time, controlled, self-sustained nuclear chain reaction. A group of scientists led by Enrico Fermi built a “pile” in a squash court beneath the stands of the Stagg Field football stadium of the University of Chicago, and achieved “criticality” for the first time. This achievement heralded the atomic age and provided a platform for the development of nuclear reactor systems, and today nuclear energy forms an important component of the world’s strategy to provide sustainable and green energy for its inhabitants.

The “Chicago Pile” as the first nuclear reactor was called, was built under circumstances of great secrecy, and during the period of the Second World War. The combination of the scientific brilliance of Enrico Fermi and the visionary thinking of Leo Szilard, aided by exceptional talent and dedication on the part of the team provided the right ingredients for success. A study of the events leading to the first criticality is inspiring and educative; the contrasting personalities of Fermi and Szilard make the story even more interesting.

The story of nuclear energy in India is no less fascinating, marked by innovative and first-of-a-kind efforts. The APSARA reactor at Trombay, commissioned in 1956, was the first nuclear reactor in the entire Asia. The Fast Breeder Test Reactor (FBTR) at Kalpakkam is the first and only reactor in the world to use plutonium uranium mixed carbide as its driver fuel. KAMINI reactor at Kalpakkam is the first and only reactor to operate with U-233 based driver fuel.

The talk will present a historical account of the first nuclear reactors, with some details on the personalities involved.

Monday, July 10th 2023

4:00 PM (Tea / Coffee 03.45 PM)

Auditorium, TIFR-H