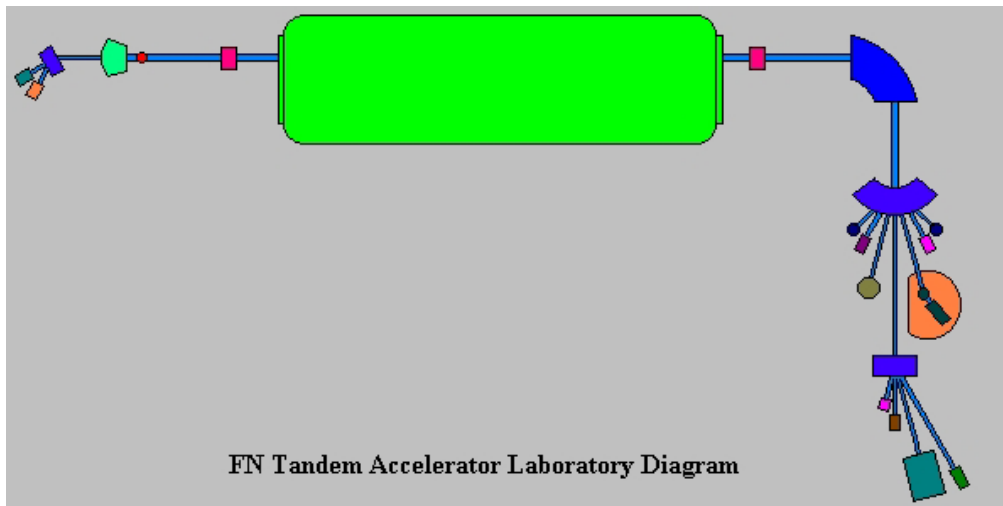


General Information



For more than 50 years, the University of Notre Dame has supported an active research program in the fields of low and medium energy experimental nuclear physics. This rich history continues today within the Nuclear Structure Laboratory, which is located in Nieuwland Science Hall on the [campus](#) of Notre Dame.

The centerpiece of the Nuclear Structure Laboratory is the model [FN Tandem Van de Graaff Accelerator](#), which is capable of reaching acceleration voltages in excess of 10.5 MegaVolts. The FN Tandem is used to accelerate a wide variety of ion beams to energies that range from a few MeV to 100 MeV. Most of these ion beams are produced by a standard [Sputter Ion Source \(SNICS\)](#), with helium beams being produced using a separate [Helium Ion Source \(HIS\)](#). In addition to the continuous, or DC, beams available from these sources, experimenters may elect to bunch and pulse the beams. The [buncher/pulsor system](#) is capable of producing beam pulses of about 1.5 nsec width, separated by 100 nsec (or by some multiple of 100 nsec using the pulse selector).



The accelerated beams from the FN Tandem can be delivered to any one of 10 different experimental target stations, located in two separate target rooms. There are two target stations, which can be used for general purpose experiments, and one of these stations contains a large (1.5m) diameter scattering chamber (known as R2D2) suitable for a wide variety of applications. In addition, one of the target stations is a dedicated [radioactive nuclear beam \(RNB\) facility](#), containing two large superconducting solenoid magnets used in the production of exotic, short-lived radioactive nuclear beams such as ${}^6\text{He}$, ${}^8\text{Li}$, etc.

In addition to the FN Tandem Van de Graaff accelerator, the laboratory also houses a smaller [KN Van de Graaff accelerator](#). This accelerator has a maximum accelerating voltage of 4 MegaVolts, but can provide high intensity positively charged, low-mass ion beams, suitable for experimental nuclear astrophysics applications. The KN accelerator facility is, at present, completely separate from the FN Tandem facility, with a separate target room and dedicated target stations.

Lastly, an even smaller accelerator, a model [JN Van de Graaff accelerator](#), has recently been moved to the Nuclear Structure Laboratory. This accelerator will also provide high intensity positively charged, low-mass ion beams, but is designed to operate at accelerating voltages below 1 MegaVolt, providing the stable, low energy beams needed for experimental nuclear astrophysics. This accelerator facility, which will share the target stations in the KN target room, will not be installed until the KN accelerator facility is fully operational.