AbstractID: 7980 Title: Cone Beam CT Workshop

The development of practical large field-of-view flat panel x-ray detectors has lead to an explosion in cone-beam computed tomography (CT) applications. In this workshop, a number of different clinical applications for cone-beam CT will be described. Methodologies for addressing issues such as x-ray scatter, detector lag, and limited field-of-view or angular coverage will also be discussed.

C-arm fluoroscopic systems have been used for image guidance in the operating room for many years. With the advent of flat panel-based C-arm systems, the availability of portable, operating room-based computed tomography systems exists. The three dimensional characteristics of CT will likely improve surgical outcomes involving surgical device implantation. The development of a portable C-arm-based CT system, for use in the operating theater as well as in other clinical settings, will be discussed.

Angiographic suites are designed to optimize vascular imaging geometry. Flat panel-based angiography suites have undergone modifications to allow CT imaging for some specific vascular imaging applications. These systems are also capable of performance in orthopedic applications. The use of such systems in a number of clinical applications will be described, and corrections methods for x-ray scatter and detector lag will also be presented.

The use of image guidance in radiation therapy applications has skyrocketed, and in many clinical radiation therapy systems, system-mounted cone-beam CT systems are available for use for guiding RT delivery. The use of cone-beam CT for radiation therapy applications will be described, and some of the challenges and limitations of this technology will be discussed.

Overall, a sampling of cone-beam CT applications will be presented in this workshop. The overall flexibility of cone-beam CT systems to accommodate the wide range of applications described is a testimony to the long term clinical potential of cone-beam CT systems. This workshop will also describe some of the compromises and limitations which are required when cone-beam CT geometry is utilized.