

## Results of the Italian neu\_ART project

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**Abstract.** The neu\_ART project aims at developing *state of the art* transmission imaging and computed tomography techniques, applied to art objects, by using neutrons as well as more conventional X-rays. In this paper a facility for digital X-ray radiography of large area paintings on canvas or wooden panels and for the X-ray tomography of large size wooden artifacts, recently installed in a protected area, is presented. The results of a K-edge radiography facility that will soon be installed in the same area are also shown.

### 1. The neu\_ART project

The neu\_ART project (“neutron and x-ray tomography and imaging for cultural heritage”), financed by the Piedmont region (Italy), is a collaboration among the University of Torino, the Istituto Nazionale di Fisica Nucleare (INFN) and the restoration centre CCR “La Venaria Reale”. Among the goals of this project is the construction of an integrated X-ray imaging system for computed tomography (CT) and digital radiography (DR) of big artworks and of a facility for K-edge radiographies of small portions of paintings. The benefits of such imaging techniques in the field of cultural heritage are widely acknowledged [1,2]. Their application is useful as preliminary step for a restoration intervention, giving significant data about conservation, history and structural technique.

### 2. X-ray digital radiography

The instrument provides high quality radiographic images of paintings up to 3×4 m<sup>2</sup> by scanning horizontal slices of their surface with an X-ray linear detector. The painting is positioned vertically in front of a motorized mechanical system allowing to select the height to be scanned. A horizontal axis, with an accurate speed control, synchronizes the detector movement with the image acquisition software. The speed can reach values up to 6.5 m/min, depending on the intensity of the signal.