

## **The ASTRA (Ancient instruments Sound/Timbre Reconstruction Application) Project brings history to life!**

**Giuseppe La Rocca**

INFN, Italy

The ASTRA project aims at recreating a model of the musical instrument and produce its sound by simulating its behaviour as a mechanical system. It uses the physical modelling synthesis, a complex digital audio rendering technique, which allows modelling the time-domain physics of the instrument starting from a set of equations and algorithms to simulate a physical source of sound. Physical modelling is a really computing intensive technique since the complex models of the musical instruments are solved by integrating numerical coupled differential equations. ASTRA computations are quite demanding in terms of network and computing requirements. The extremely high reliability of the GÉANT2 network, its performances in terms of distributed resources connected, made the ASTRA project possible. The benefits of this project are far reaching because ASTRA makes it possible to recreate the sound of instruments that previously would have been either too expensive or too difficult to manufacture by hand.