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| Uni-LOGO | Fakultät für Physik**Isotopenforschung** und **Kernphysik** |

E I N L A D U N G zum V E R A - S E M I N A R

von

#### **Lucio Calcagnile**

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**Ten years of AMS at CEDAD: Radiocarbon dating of the “Capitoline She-Wolf” and other applications**

CEDAD (Centre for Dating and Diagnostics) is a multidisciplinary research Centre of the University of Salento involved in applied and fundamental research activities in different research fields such as AMS radiocarbon dating, cultural heritage diagnostics by mean of non-destructive Ion Beam Analysis techniques, environmental monitoring, materials and forensic sciences. The Centre is based on a 3 MV Tandetron accelerator equipped with two AMS experimental beam lines, RBS, PIXE-PIGE beamlines in air, nuclear microprobe and high energy ion implantation.

Archaeology is one of the most important research fields at CEDAD. The possibility offered by AMS to analyze samples of mass in the sub-mg range allows the extraction of suitable material for radiocarbon dating also from complex, inorganic matrixes containing only traces of organic residues such as the casting cores of ancient bronze statues. By this approach the dating of objects with a high cultural or religious value is possible with a high degree of accuracy which allows to solve historical controversies, often difficult to solve by alternative approaches.

In this talk the results of the radiocarbon dating analyses carried out on organic residues extracted from the inner cores of the “Capitoline She-Wolf”, a bronze statue housed in a dedicated room in the “Capitolini” museums in Rome, will be presented. The statue, of an extraordinary cultural and symbolic value, represents a she-wolf feeding two infants and it is inspired by the legendary founding of the city of Rome by the two twins Romulus and Remus. Although traditionally and almost unanimously considered Etruscan and dated to the 5th century BC, the dating of the statue has been subject, more recently, to large controversies among scholars. In fact considerations about the casting technology have suggested a possible dating of this artefact to the Middle Ages. In this study different samples of the casting cores, extracted from different areas of the statue were selected to be submitted to 14C dating. It was possible to extract twenty-eight organic samples such as charcoal, vegetal remains and seeds in quantities suitable to allow their radiocarbon dating by AMS. All the analyzed samples gave consistent radiocarbon ages. Statistical tests showed a normal distribution of the data and allowed the combination of the measurements to a calibrated date in the 11th-12th centuries AD range, with a two-sigma confidence level. This study has thus given a fundamental contribution to the solution of this long-lasting controversy among archaeologists and art historians. Other applications using the integrated approach AMS –IBA at CEDAD will be shown during the talk.

### Donnerstag, 13.12.2012, 16:30 Uhr

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",
1. Stock, Victor-Franz-Hess Hörsaal**

R. Golser W. Kutschera E.M. Wild