



UNIVERSITÀ DELLA CALABRIA

DIPARTIMENTO DI  
MATEMATICA  
E INFORMATICA

Dipartimento di Matematica e Informatica

# Avviso di Seminario

**Martedì 16 febbraio 2016 – ore 10:30**

**Sala A del L.A.N. – cubo 30A piano terra**

il prof. *Helmut R. Malonek*

Department of Mathematics, University of Aveiro, Portugal

terrà un seminario dal titolo:

## *From Appell polynomials in Hypercomplex Function Theory to generalized Vietoris' number sequences in positive trigonometric sums*

### **Abstract:**

*The last 50 years saw an increasing development of function theories in Clifford algebras, which are in some sense dual to the function theory of several complex variables. Naturally, different types of multivariate polynomials played therefore a decisive role, particularly in series expansions of generalized holomorphic functions or related approximation and interpolation problems in higher dimensions. Recently, the application of Clifford holomorphic Appell polynomial sequences in elasticity and other fields showed their usefulness for overcoming basic problems in dealing with polynomials caused by the non-commutative generators of Clifford algebras.*

*After referring the definition and properties of Appell polynomials in Hypercomplex Function Theory we show that generalized 3D-Appell sequences of Clifford holomorphic polynomials are characterized by the same coefficient sequence as certain positive sine and cosine sums in a celebrated theorem of L. Vietoris (1958).*

*Here we also show that this approach leads to generalizations of Vietoris' number sequence through nD-Appell polynomials. Their generating functions are directly obtained in form of hypergeometric functions. Surprisingly, the approach also allows their representation exclusively by non-commutative generators of Clifford algebras. These results show once more that certain number sequences sometimes reveal connections between subjects from seemingly very distant mathematical areas.*

Il Direttore del Dipartimento  
*prof. Nicola LEONE*