

**Ehud Meir:**

Algebraic structures and descent by symmetric monoidal categories and  
Deligne's Theory

**Abstract:** Let  $W$  be a finite dimensional algebraic structure over a field  $K$  of characteristic zero (e.g. an algebra, a Hopf algebra, a comodule algebra). In this talk I will explain how to construct a symmetric monoidal category  $C_W$  which is a complete invariant of  $W$ . This category will be a form of  $Rep_K - G$ , where  $G$  is the algebraic group of automorphisms of  $W$ , over some subfield  $K_0$  of  $K$ . By using the theory of Deligne on symmetric monoidal categories I will show how one can use this category to construct a generic form of  $W$ , and to study scalar invariants of  $W$ . I will give some examples of this category when  $W$  is of the form  ${}^\alpha H$  where  $H$  is a group algebra or Sweedler or Taft Hopf algebra, and  $\alpha$  is some two cocycle. If time permits, I will also explain how can one use this category to study embeddings of projective varieties in projective spaces.