AMALGAMATED ALGEBRAS ALONG AN IDEAL

CARMELO ANTONIO FINOCCHIARO

[Joint work with M. D'Anna and M. Fontana]. Let $f : A \longrightarrow B$ be a ring homomorphism and J be an ideal of B. Then we consider the following subring

$$A \bowtie^f J := \{(a, f(a) + j) : a \in A, j \in J\}$$

of $A \times B$ and call it *the amalgamation of A with B along J, with respect to f.* This construction generalizes the amalgamated duplication of a ring along an ideal, introduced and studied in [1] and [2]. Moreover, several constructions (like the rings of the type $A + XB[X]$ or $D + M$, etc.) can be seen as particular cases of the amalgamation. In this talk, I will study conditions on A, B, f and J to transfer algebraic properties from A and B to $A \bowtie^f J$ and conversely, by using also the fiber product structure of $A \bowtie^f J$. I will give a classification of all the fiber products that can arise from an amalgamation. Moreover I will study the chains of prime ideals of $A \bowtie^f J$ in order to give bounds for the dimension of $A \bowtie^f J$.

[1] M.D'Anna and M. Fontana *An amalgamated duplication of a ring along an ideal: the basic properties*, J. Algebra Appl. **6** (2007), pp. 443–459.

[2] M.D'Anna and M. Fontana, *The amalgamated duplication of a ring along a multiplicative-canonical ideal*, Arkiv Mat. **45** (2007), pp. 241–252.

Dipartimento di Matematica – Roma Tre

Largo San Leonardo Murialdo 1 – 00146 – Roma
E-mail address: carmelo@mat.uniroma3.it