Florence Algebra Seminar - 16$^{\text{th}}$ October 2019

## Classifying $2$-blocks with an elementary abelian defect group

### Cesare Giulio Ardito - University of Manchester

Donovan's conjecture predicts that given a $p$-group $D$ there are only finitely many Morita equivalence classes of blocks of group algebras with defect group $D$. While the conjecture is still open for a generic $p$-group $D$, it has been proven in 2014 by Eaton, Kessar, Külshammer and Sambale when $D$ is an elementary abelian 2-group, and in 2018 by Eaton and Livesey when $D$ is any abelian 2-group. The proof, however, does not describe these equivalence classes explicitly.

A classification up to Morita equivalence over a complete discrete valuation ring $\mathcal{O}$ has been achieved for $D$ with rank 3 or less, and for $D = (C_2)^4$.

I have done $(C_2)^5$, and I have partial results on $(C_2)^6$. I will introduce the topic, give the relevant definitions and then describe the process of classifying this blocks, with a particular focus on the individual tools needed to achieve a complete classification.