

Preface

Arad and Chen proved in [AC] and [AC1] that a Normalized Integral Table Algebra (fusion ring) (A, B) generated by a non-real faithful element $b_3 \in B$ of degree three the non-identity elements of which have minimal degree 3 satisfies the condition $b_3\bar{b}_3 = 1 + b_8$ where $b_8 \in B$ is an element of degree 8. They also showed that the general case naturally splits into four main sub-cases:

- (1) $(A, B) \cong_x (CH(PSL(2, 7), Irr(PSL(2, 7)))$;
- (2) $b_3^2 = b_4 + b_5$ where $b_4, b_5 \in B$ are elements of degrees 4 and 5;
- (3) $b_3^2 = \bar{b}_3 + b_6$ where $b_6 \in B$ is a non-real element of degree 6;
- (4) $b_3^2 = c_3 + b_6$ where $c_3, b_6 \in B$ are elements of degrees 3 and 6, $c_3 \neq b_3, \bar{b}_3$.

The cases (1), (3) and (4) are considered in Chap. 2. Chapter 3 deals with the case (2). Chapters 4 and 5 analyze the most complicated case—the third one. We developed new original methods for enumerating NITAs in the title. Using the developed technique we settled the above cases almost completely.

On Normalized Integral Table Algebras (Fusion Rings)
Generated by a Faithful Non-real Element of Degree 3

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