Theory of $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$ Number Systems

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1 Introduction

We introduce the number system $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$, where $\mathbb{Y}_m(F)$ serves as the index for a higher-order structure in the field K. This framework generalizes the traditional $\mathbb{Y}_n(F)$ systems and provides a hierarchical approach to number systems.

2 Preliminary Definitions

Let F and K be fields, not necessarily distinct or related. We define the Yang number system $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$ as a structure indexed by $\mathbb{Y}_m(F)$ over the field K. This system can be viewed as a vector bundle over K with fiber dimensions depending on the elements of $\mathbb{Y}_m(F)$.

2.1 Basic Properties

- $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$ generalizes vector spaces and fields.
- Each element of $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$ corresponds to a bundle fiber whose dimension is indexed by elements of $\mathbb{Y}_m(F)$.

3 Next Steps for Refinement

We aim to develop:

1. Algebraic structures of $\mathbb{Y}_{\mathbb{Y}_m(F)}(K)$.
2. Interactions with other Yang number systems.
3. Cohomological interpretations.