Exploring Compression Techniques for ROOT IO

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Introduction

• ROOT uses tree to store large amount of objects.
• Trees allow sequential and random access to any entries.
• Trees have branches which behaves as column oriented database.
Event Structure:

```java
class A {
    class B {
        class D;
        class E;
    };
    class C {
        class F;
        class G;
    };
};
```
Trees are serialized by same branches:

- Easy comparison within the same branch.
- Redundant data are close together.
• Each branch has a basket.
• Each basket is filled with events.
• Each basket is compressed and flush to disk once it is full.
Motivation

- Why alternative compression algorithms?
- Does ROOT compression compare well to naïve approach?
- How random reads perform?