SUPERFLUOUS CASTS

Ross Tate

(NON-STANDARD) TERMINOLOGY

Superfluous cast

- A cast that will never fail (but for reasons the type system cannot capture)

(NON-STANDARD) TERMINOLOGY

Foo[]

- "safe": loads return Foos
- "live": stores of Foos succeed
- "reified": has rtt of type argument
- "covariant": is also an Object[]

MVP (ANY OF THEM)

- Cannot guarantee safety of reference arrays

- Loads from reference arrays must be cast

COST OF SUPERFLUOUS CASTS?

```
static class Super { final int x; }
public static int sum(Super[] supers) {
    int sum = 0;
    for (int i = 0; i < max; i++)
        sum += supers[i % 1000].x;
    return sum;
}
```

- Java array access (#120):
  - 26% overhead when Super is final
  - 48% overhead otherwise
- Java array sort by int field (#139):
  - 6% overhead when Super is final
  - 12% overhead otherwise
- Other operations:
  - Unknown overhead

DISCUSS