# Sphere Packing in Lean

Maryna Viazovska

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## 1 Basic definitions for sphere packings

### 1.1 Sphere packings

The sphere packing constant measures which portion of $d$-dimensional Euclidean space can be covered by nonoverlapping unit balls.

### 1.2 Dummy Lemmas

Here are some dummy lemmas to test whether blueprint and its Lean interface actually work.

**Lemma 1.** *For all natural numbers $n$, we have that $n = n$.*

*Proof.* Proof by reflexivity. □

**Lemma 2.** *For all integers $n$, we have that $n = n$.*

*Proof.* This is super hard to prove so we will `sorry` it for now. □

**Lemma 3.** $1 + 1 = 2$.

*Proof.* Proof by computation. □

Let's turn things up a notch.

**Lemma 4.** *There exists an isomorphism*

$$\mathbb{R}[X]/(X^2 + 1) \cong \mathbb{C}$$

*Proof.* Proof by next level algebra awesomeness. □