Signed Set Decomposition Existence

1 Why

Does a signed-set decomposition exist for any signed measure?

2 Result

The answer is yes.

Proposition 1. *Let $(X, \mathcal{A})$ be a measurable space. Let $\mu : \mathcal{A} \to [-\infty, \infty]$ be a signed measure. There exists a signed-set decomposition of X under μ.*

Proof. TODO □

2.1 Uniqueness