

## Complete Inner Product Decomposition

**Proposition 1.** Let (V, F) be a complete inner product space. Let M be a closed subspace. Then

$$H = M \oplus M^{\perp}$$
.

That is for all  $x \in V$ , there exists unique  $z \in M$  and  $q \in M^{\perp}$  such that x = z + w.

