**Info**

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# $\mathscr{O} \cap L^2(D)$

Let $f \in \mathscr{O} \cap L^2(D)$ with

$$f(z) = \sum_{n \in \mathbb{N}} a_n z^n \qquad \text{on } D$$

then

$$\begin{aligned} \|f\|_2^2 &= \int_D |f^2| \\ &= \int_D f\bar{f} \\ &= \int_D \sum_{n,m \in \mathbb{N}} a_n \overline{a_m} z^n \overline{z^m} \\ &= \sum_{n \in \mathbb{N}} |a_n|^2 \int_D |z|^{2n} \\ &= \pi \sum_{n \in \mathbb{N}} \frac{|a_n|^2}{n+1} \end{aligned}$$

$$\hat{}: \mathscr{O} \cap L^2(D) \to l^2\left(\mathbb{N}, \frac{1}{\mathsf{Id}+1}\right)$$

**is an isometric isomorphism.**

**Proposition:**

$$\mathscr{O} \cap L^2(D) = \mathscr{O} \cap L^2(D^\times)$$

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Current note has 0 direct children and 0 total descendants.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - 1Hol Holomorphic functions on spaces over $\mathbb{C}$ of dimension 1
      - space D L2 $\mathscr{O} \cap L^2(D)$

And it has 22 siblings.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - 1Hol Holomorphic functions on spaces over $\mathbb{C}$ of dimension 1
      - approx rat Approximation of holomorphic functions on $\mathbb{C}$ by rational functions
      - embedding into C3 Embedding unit disk $D$ into $\mathbb{C}^3$
      - factorization Factorization of holomorphic functions on $\mathbb{C}$
      - global Global holomorphic functions
      - Hol Equivalent descriptions of holomorphic functions
      - Mer Meromorphic functions on the complex plane
      - Mer at infinity Holomorphic functions meromorphic at infinity
      - modular Modular forms
      - recons mer from stalk Reconstructing meromorphic functions from stalks
      - reflection Extending holomorphic functions by reflections
      - rotation symmetrizer Rotational symmetrization of holomorphic functions
      - sheaf Sheaf of holomorphic functions on $\mathbb{C}$
      - space $\mathscr{O}(U)$
      - space C $\mathscr{O}(\mathbb{C})$
      - space D $\mathscr{O}(D)$
      - space D closed $\mathscr{O}(\overline{D})$
      - space D cnt bd $\mathscr{O}(D) \cap \mathcal{C}(\overline{D})$
      - space D L2 $\mathscr{O} \cap L^2(D)$
      - space H $\mathscr{O}^p(H^2_{\mathrm{U}})$
      - space Lp $\mathscr{O} \cap L^p$
      - space S1 $\mathscr{O}(S^1)$
      - zeros and singularities Zeros and singularities of holomorphic functions