# vi. Wick and projective quantizations

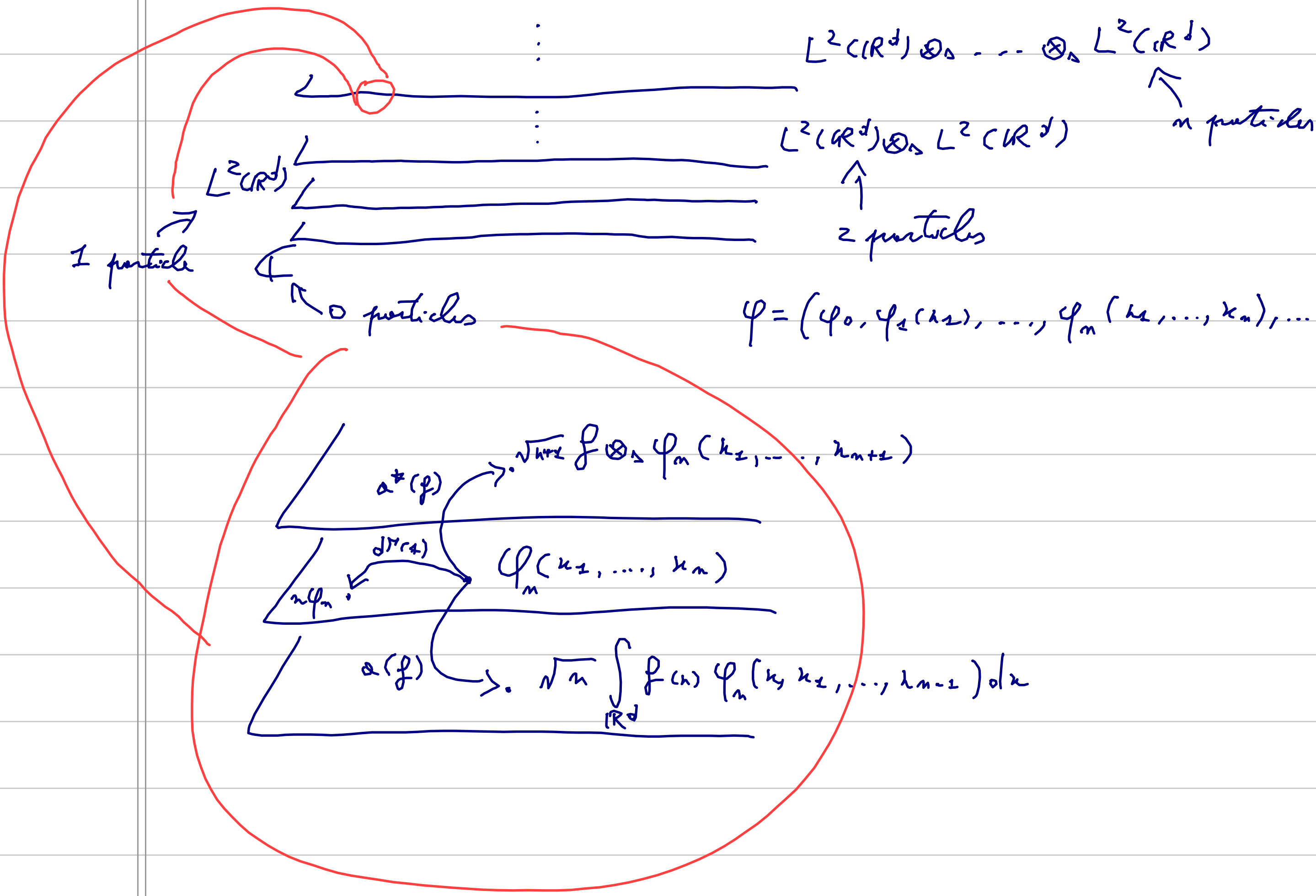


For the sake of simplicity, we will only review Wick and projective quantization on $L^2(\mathbb{R}^d)$, but it can be easily generalized to any (separable) Hilbert space $\mathcal{Z}$.

## (A) Fock space and Wick quantization of polynomials.

$$\Gamma_s(L^2(\mathbb{R}^d)) = \bigoplus_{n=0}^{\infty} \big(\underbrace{L^2(\mathbb{R}^d) \otimes_s \dots \otimes_s L^2(\mathbb{R}^d)}_{n \text{ times}}\big) = \bigoplus_{n\in\mathbb{N}} L^2_n$$

$$\underbrace{L^2(\mathbb{R}^d) \otimes_s \dots \otimes_s L^2(\mathbb{R}^d)}_{0 \text{ times}} := \mathbb{C}.$$




$$\varphi = (\varphi_0, \varphi_1(x_1), \dots, \varphi_n(x_1, \dots, x_n), \dots)$$

**Def.** ($\mathcal{P}_{p,q}(L^2)$) $\quad b(f) \in \mathcal{P}_{p,q}(L^2)$ iff:

(Gat/Fré)

i) $\tilde{b} = \frac{1}{p!}\frac{1}{q!}\,\partial_f^{p}\,\partial_{\bar{f}}^{q}\, b(f) \in \mathcal{L}(L^2_p, L^2_q)$

ii) $b(f) = \langle \underbrace{f\otimes\cdots\otimes f}_{q}, \tilde{b}\, \underbrace{f\otimes\cdots\otimes f}_{p} \rangle$