











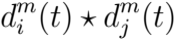


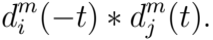




$$\int d\vec{x} \left(\frac{1}{2} \sum_i \dot{\phi}_i^2 - \sum_j V(\phi_j) \right)$$

$$\int d\tau d\sigma \left(\frac{1}{2} \dot{x}^2 + \frac{1}{2} \dot{y}^2 + \frac{1}{2} \dot{z}^2 - \frac{1}{2} \dot{\tau}^2 - \frac{1}{2} \dot{\sigma}^2 + \frac{1}{2} \dot{\phi}^2 \right) + \int d\tau d\sigma \left(\frac{1}{2} \dot{x}^2 + \frac{1}{2} \dot{y}^2 + \frac{1}{2} \dot{z}^2 - \frac{1}{2} \dot{\tau}^2 - \frac{1}{2} \dot{\sigma}^2 + \frac{1}{2} \dot{\phi}^2 \right) + \int d\tau d\sigma \left(\frac{1}{2} \dot{x}^2 + \frac{1}{2} \dot{y}^2 + \frac{1}{2} \dot{z}^2 - \frac{1}{2} \dot{\tau}^2 - \frac{1}{2} \dot{\sigma}^2 + \frac{1}{2} \dot{\phi}^2 \right)$$









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$$\frac{d}{dt} m(t) = \int w_i(\tau) d\tau + m_i(t)$$

$\pi \left(\frac{1}{2} + \frac{1}{2} \sqrt{5} \right) \left(\frac{1}{2} + \frac{1}{2} \sqrt{5} \right) + \pi \left(\frac{1}{2} - \frac{1}{2} \sqrt{5} \right) \left(\frac{1}{2} - \frac{1}{2} \sqrt{5} \right)$

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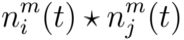
THE UNIVERSITY OF CHICAGO



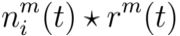




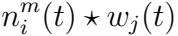
W E R













$$\left[m^m(t) * w_i(t) + m^m(t) \right] * w_j(t) + m^m(t)$$

$$\left[m^m(-t) * w_2(-t) + m^m(-t) \right] * \left[m^m(t) * w_2(t) + m^m(t) \right]$$

$$\left[r^n(t) * w_i(t) * r^n(t) * w_j(t) \right] + \left[w_i(t) * r^n(t) * w_j(t) \right]$$

$$\left[r^n(t) * r^n(t) \right] * \left[v_s(t) * v_s(t) \right] + \left[r^n(t) * v_s(t) \right]$$

$\mathbb{R}^n \times \mathbb{R}^n \rightarrow \mathbb{R}^n \times \mathbb{R}^n$

$(x, y) \mapsto (x + y, x - y)$





$$\min_{w_i(t), R^m} \sum_{\{m, i, j\}} \int \{c_{ij}^m(t) - R^m [w_i(t) * w_j(t)]\}^2 dt + \epsilon \sum_i \int [w_i(t)]^2 dt.$$





WORLDWIDE



$\text{Re} [w_s(t)] + \text{Im} [w_s(t)]$ \star $\text{Re} [w_s(t)] + \text{Im} [w_s(t)]$



1990-1991



$$A^m [w_1(t) * w_2(t) + w_3(t) * w_4(t)].$$