Title: TBA

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Abstract:

$$\eta = \int \frac{dt}{u^2}$$

$$\hbar = 1.$$

$$\mathcal{D}q = \frac{1}{\sqrt{2\pi i \Delta t_0}} \prod_{k=1}^{N \to \infty} \frac{dq_k}{\sqrt{2\pi i \Delta t_k}}$$

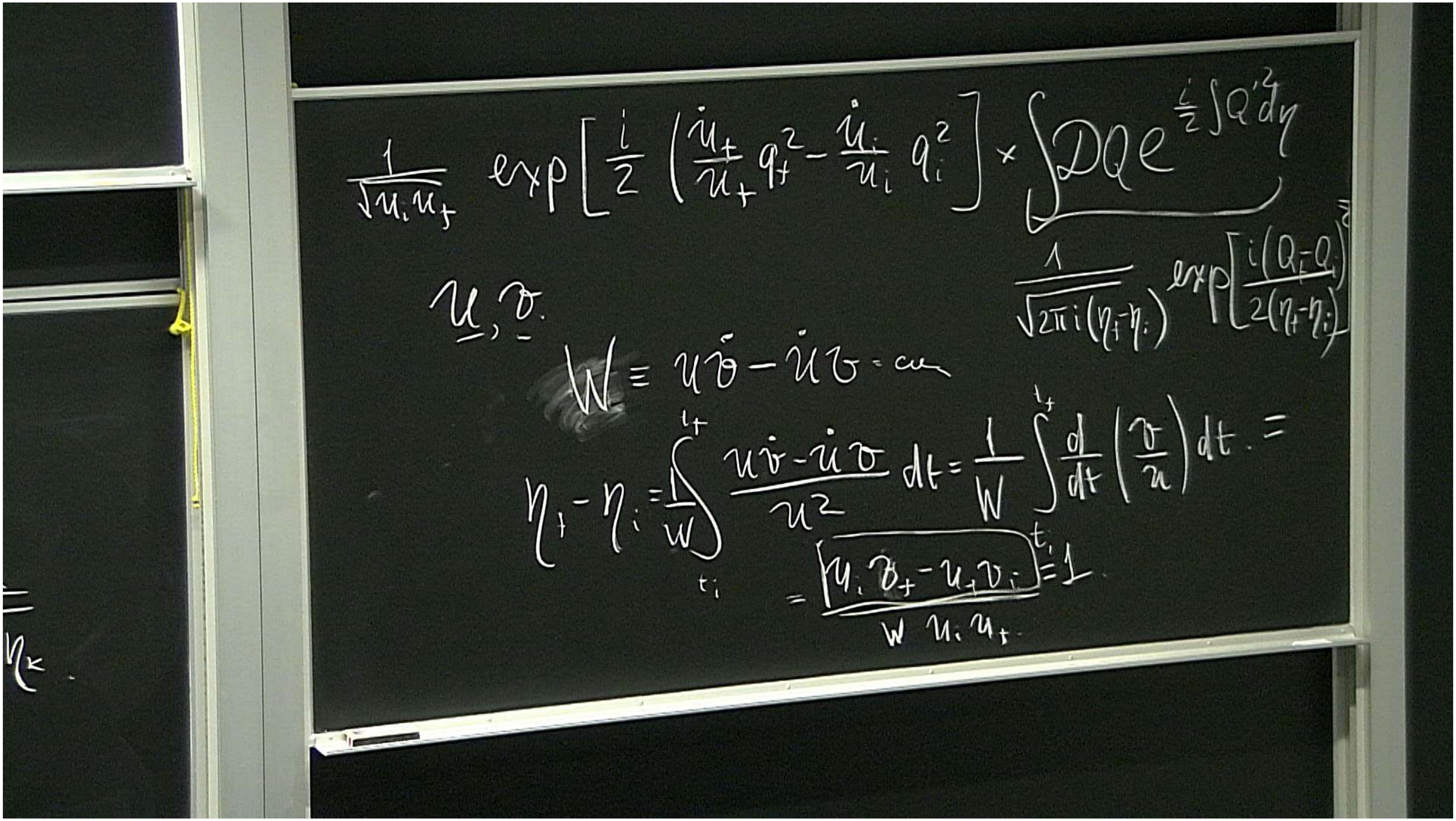
$$\Delta t_k = \int_{\eta_k}^{\eta_{k+1}} u^2 \, d\eta = u^2(\eta_k)\Delta\eta + \frac{1}{2} \frac{du^2}{d\eta}\bigg|_k \Delta\eta_k^2 + \dots$$

$$= u_k^2 \Delta\eta_k \exp\left[\frac{1}{2u} \frac{du^2}{d\eta}\bigg|_k \Delta\eta_k\right] + \dots$$

$$\mathcal{D}q = \frac{1}{u_i} \exp\left[-\frac{1}{2}\int_i^f \frac{d\ln u}{d\eta}\, d\eta\right] \mathcal{D}Q$$

$$\mathcal{D}Q = \frac{1}{\sqrt{\dots \Delta\eta_0}} \prod \frac{dQ_k}{\sqrt{\dots \Delta\eta_k}}$$

$$K = \int \mathcal{D}q \, \exp\left[S[q]\right] =$$



$\frac{1}{\sqrt{u_i u_f}} \exp\left[\frac{i}{2}\left(\frac{\dot u_f}{u_f} q_f^2 - \frac{\dot u_i}{u_i} q_i^2\right)\right] \times \underbrace{\int \mathcal{D}Q\, e^{\frac{i}{2}\int Q'^2 d\eta}}_{\frac{1}{\sqrt{2\pi i(\eta_f-\eta_i)}} \exp\left[\frac{i(Q_f-Q_i)^2}{2(\eta_f-\eta_i)}\right]}$
$\underline{u}, \underline{v}.$
$W \equiv u\dot v - \dot u v = \text{const}$
$\eta_f - \eta_i = \frac{1}{W}\int_{t_i}^{t_f} \frac{u\dot v - \dot u v}{u^2}\, dt = \frac{1}{W}\int_{t_i}^{t_f} \frac{d}{dt}\left(\frac{v}{u}\right) dt =$
$= \frac{\boxed{u_i v_f - u_f v_i} = 1}{W\, u_i u_f}$
η_k

$$K = \sqrt{\frac{W}{2\pi i}}\, \exp\left[\frac{i}{2}\left(\frac{W u_i + \dot{u}_t}{u_t} q_t^2 + \frac{W u_t - \dot{u}_i}{u_i} q_i^2 - 2W q_i q_t\right]\right.$$

$$= \sqrt{\frac{W}{2\pi i}}\, \exp\left[\frac{i}{2}\left(u_i \dot{v}_t - v_i \dot{u}_t\right) q_t^2 + \left(u_t \dot{v}_i - v_t \dot{u}_i\right) q_i^2 - 2W q_i q_t\right]$$

$$= \left(-\frac{1}{2\pi i} \frac{\partial^2 S(q_i, q_t)}{\partial q_t \partial q_i}\right)^{1/2} \exp\left[i S_{cl}\right]$$