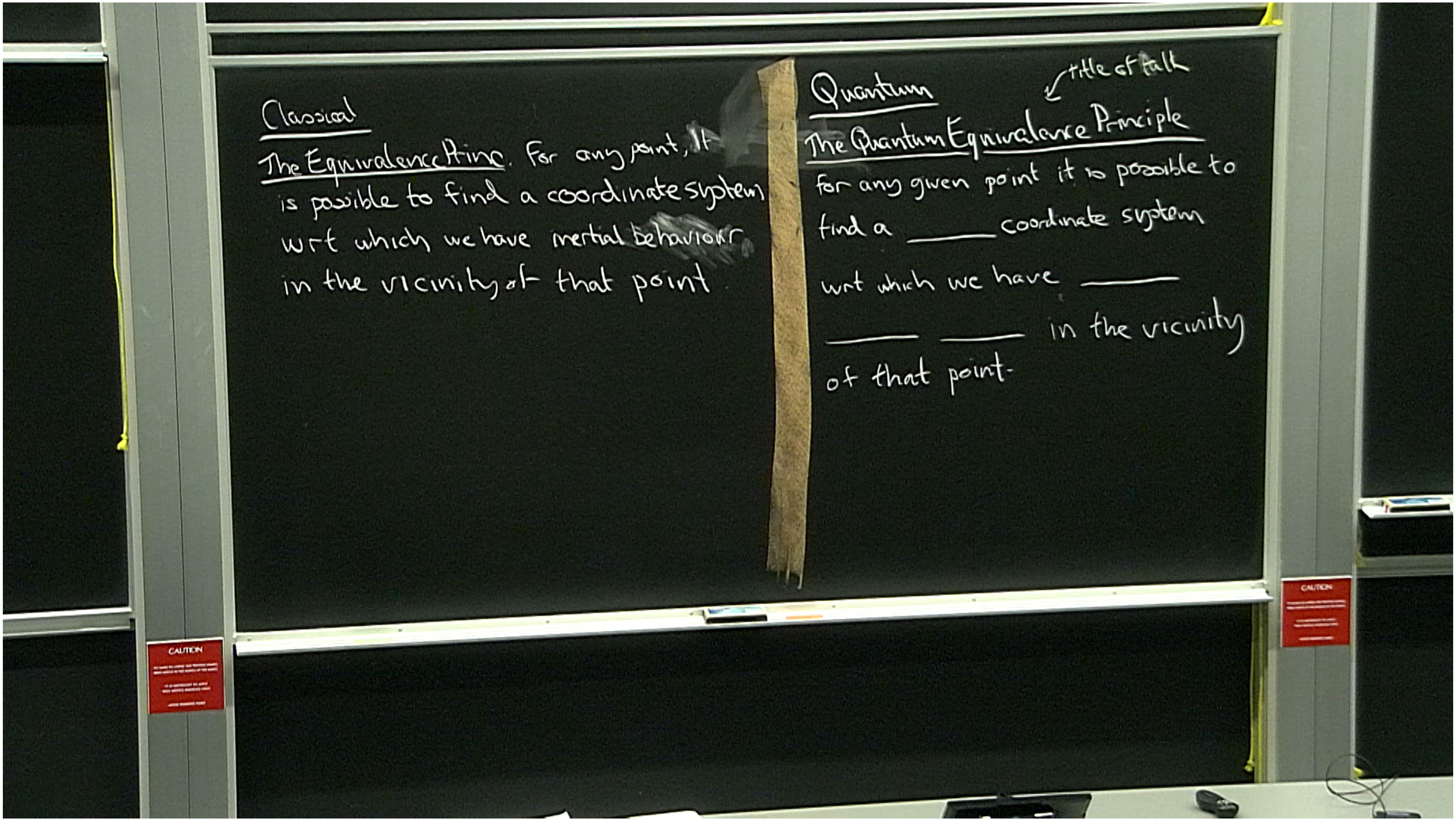
Title: TBA

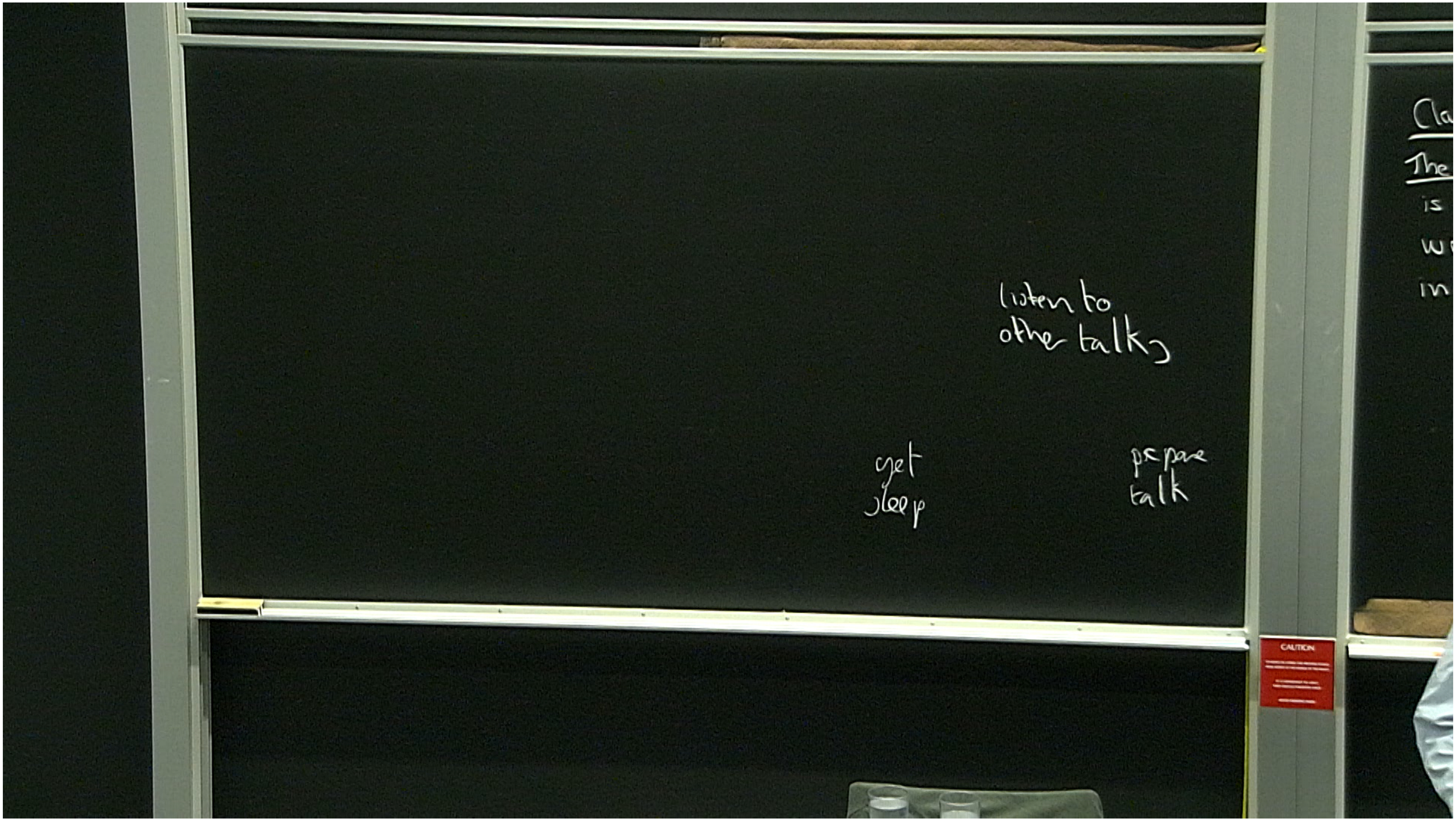
Speakers: Lucien Hardy

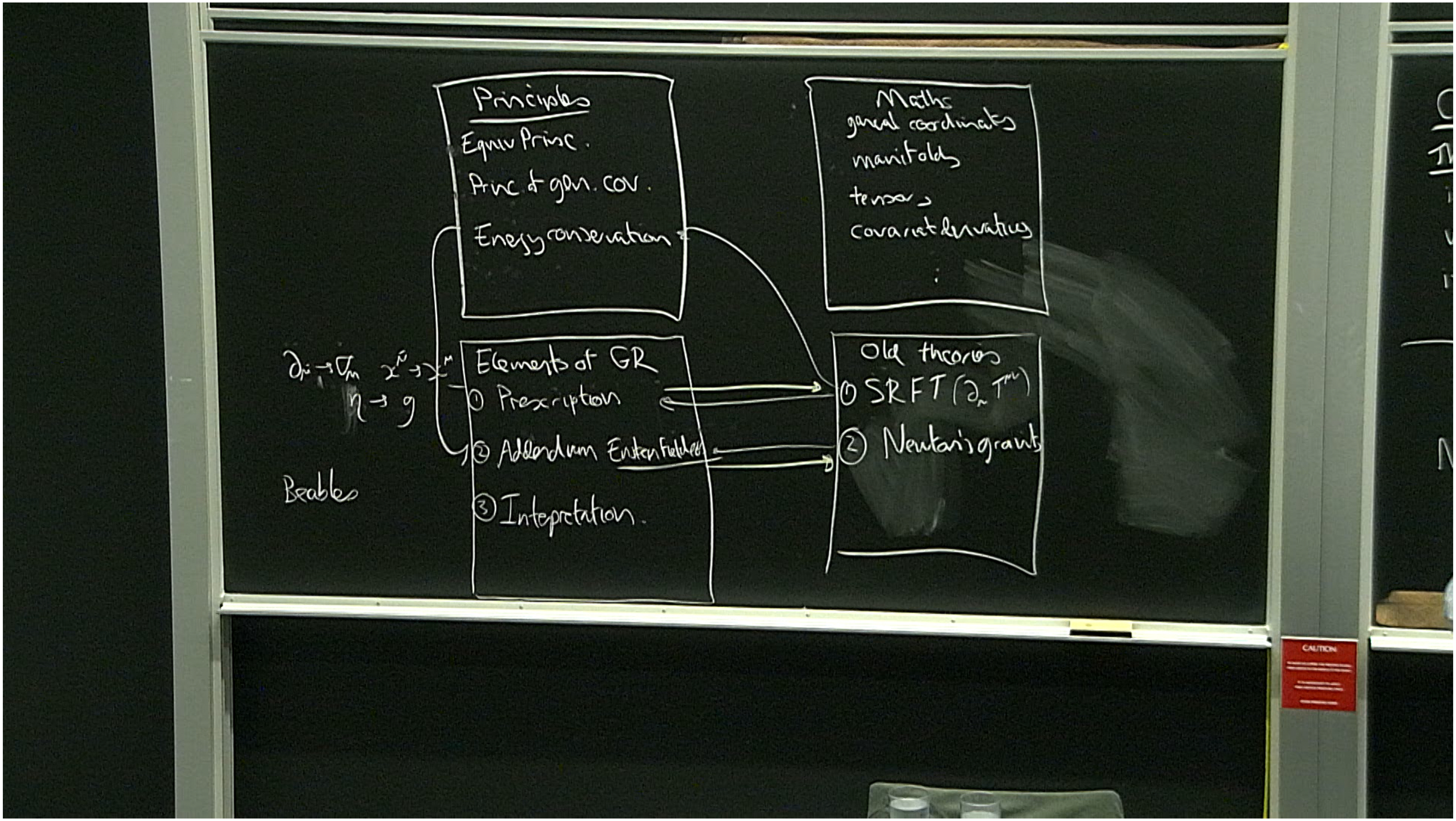
Collection: Indefinite Causal Structure

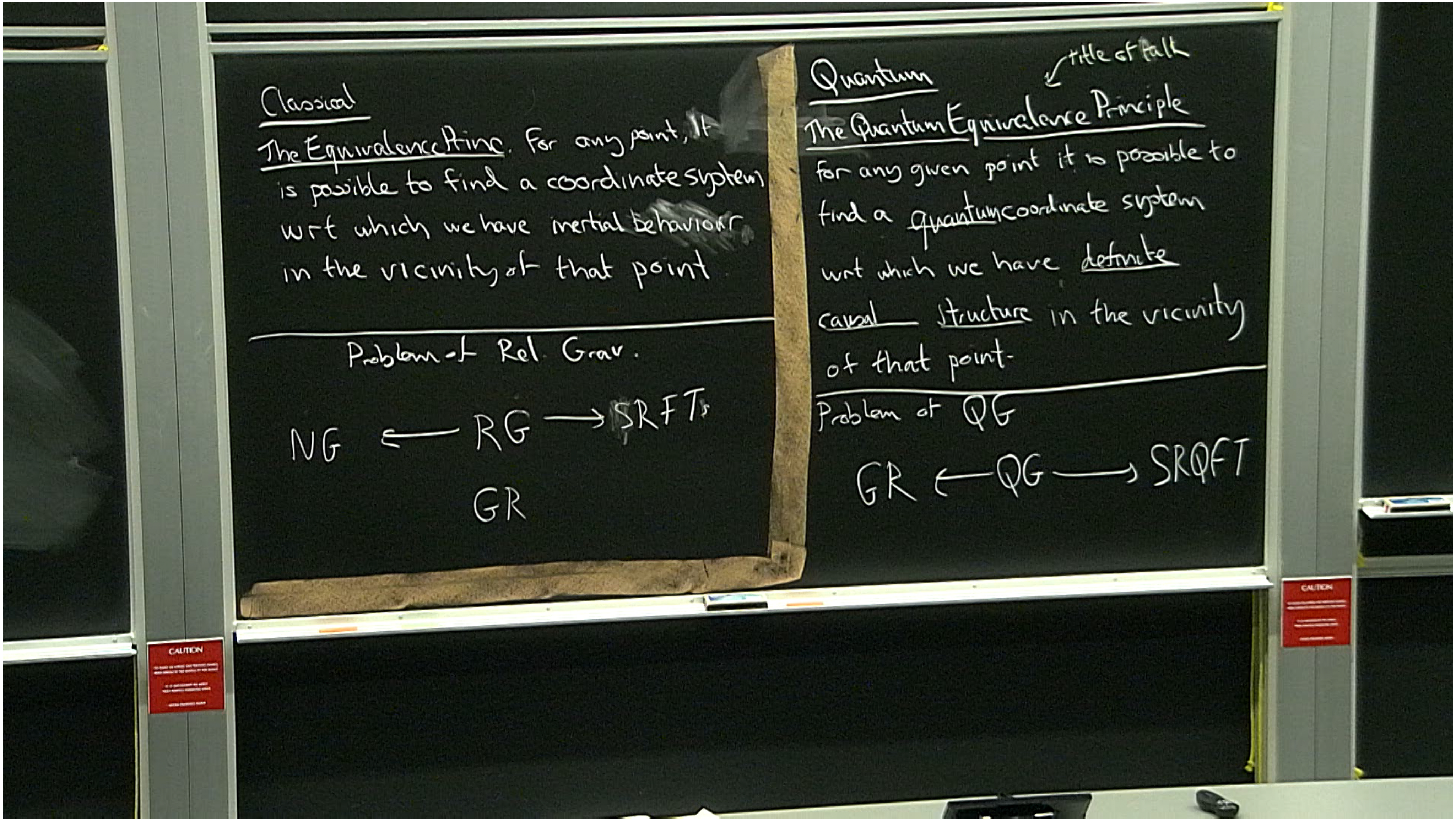
Date: December 11, 2019 - 4:00 PM

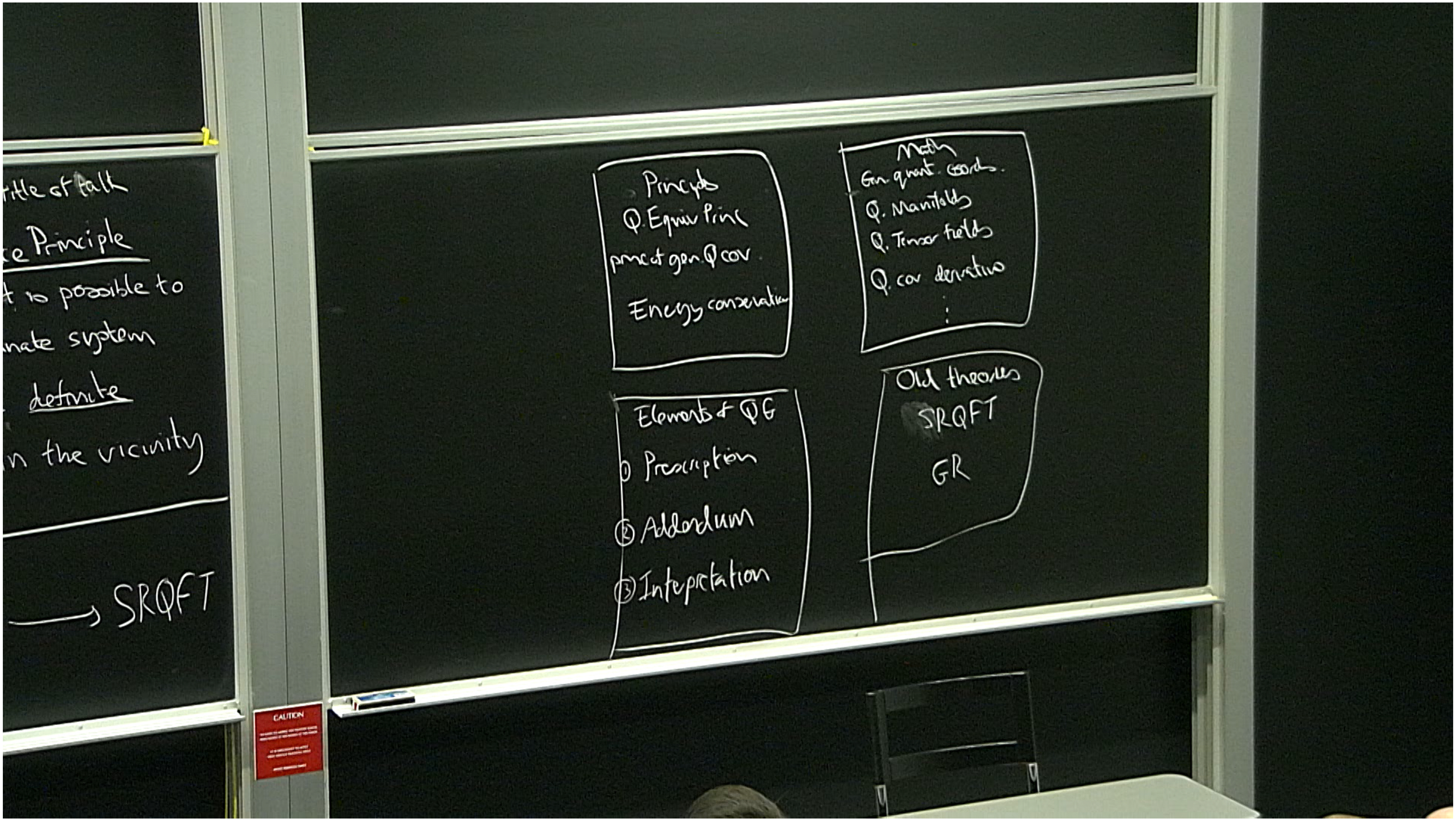
URL: http://pirsa.org/19120039


Classical
The Equivalence Princ. For any point, it
is possible to find a coordinate system
wrt which we have inertial behaviour
in the vicinity of that point
Quantum
title of talk
The Quantum Equivalence Principle
for any given point it is possible to
find a _____ coordinate system
wrt which we have _____
_____ _____ in the vicinity
of that point.
CAUTION
CAUTION

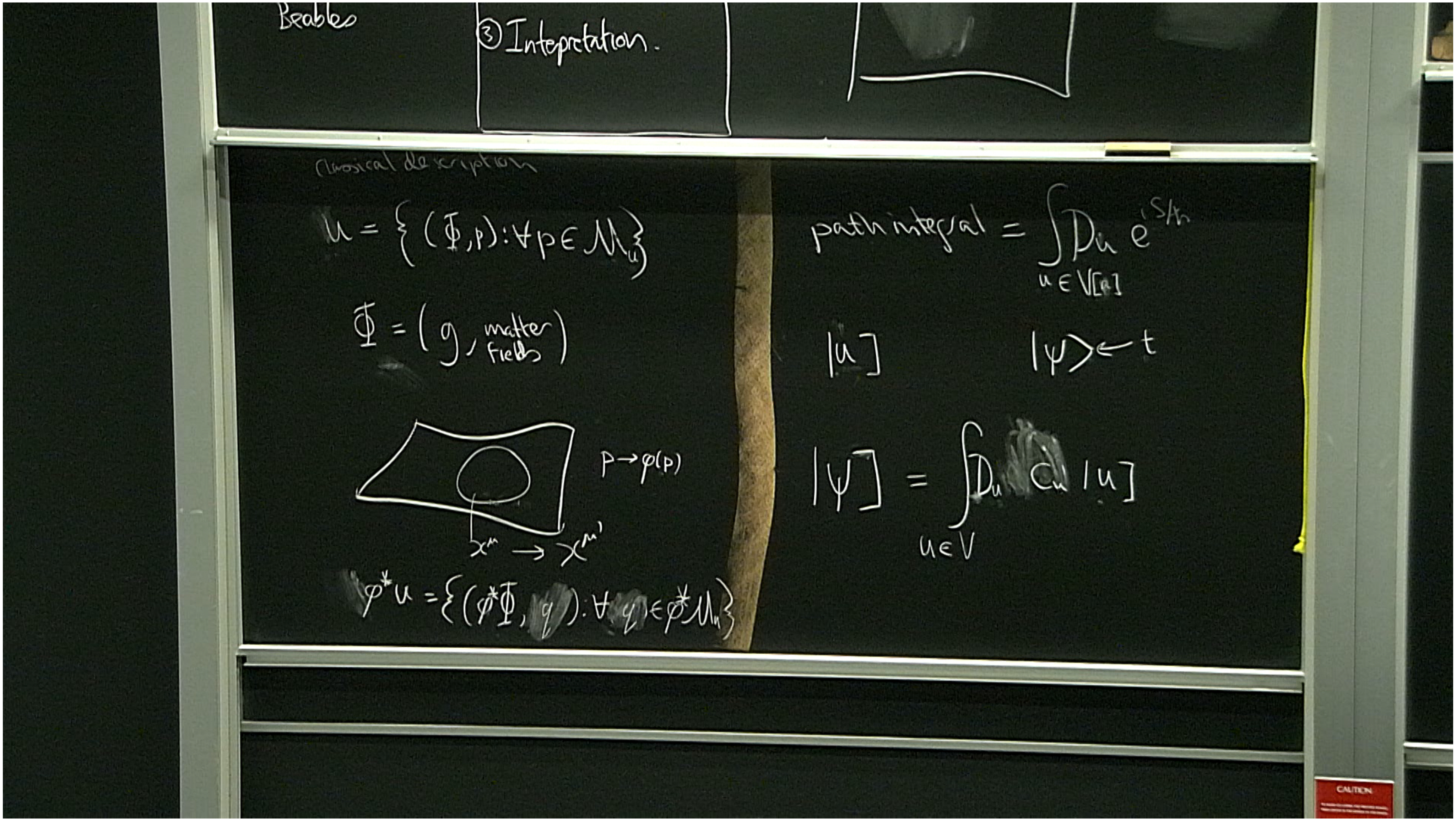

listen to
other talks
get
sleep
prepare
talk


Principles
Equiv Princ.
Princ of gen. cov.
Energy conservation
Maths
general coordinates
manifolds
tensors
covariant derivatives
Elements of GR
① Prescription
② Addendum Einstein field eqs
③ Interpretation.
Old theories
① SRFT ($\partial_\mu T^{\mu\nu}$)
② Newton's gravity
$\partial_\mu \to \nabla_\mu$
$\eta \to g$
Beables

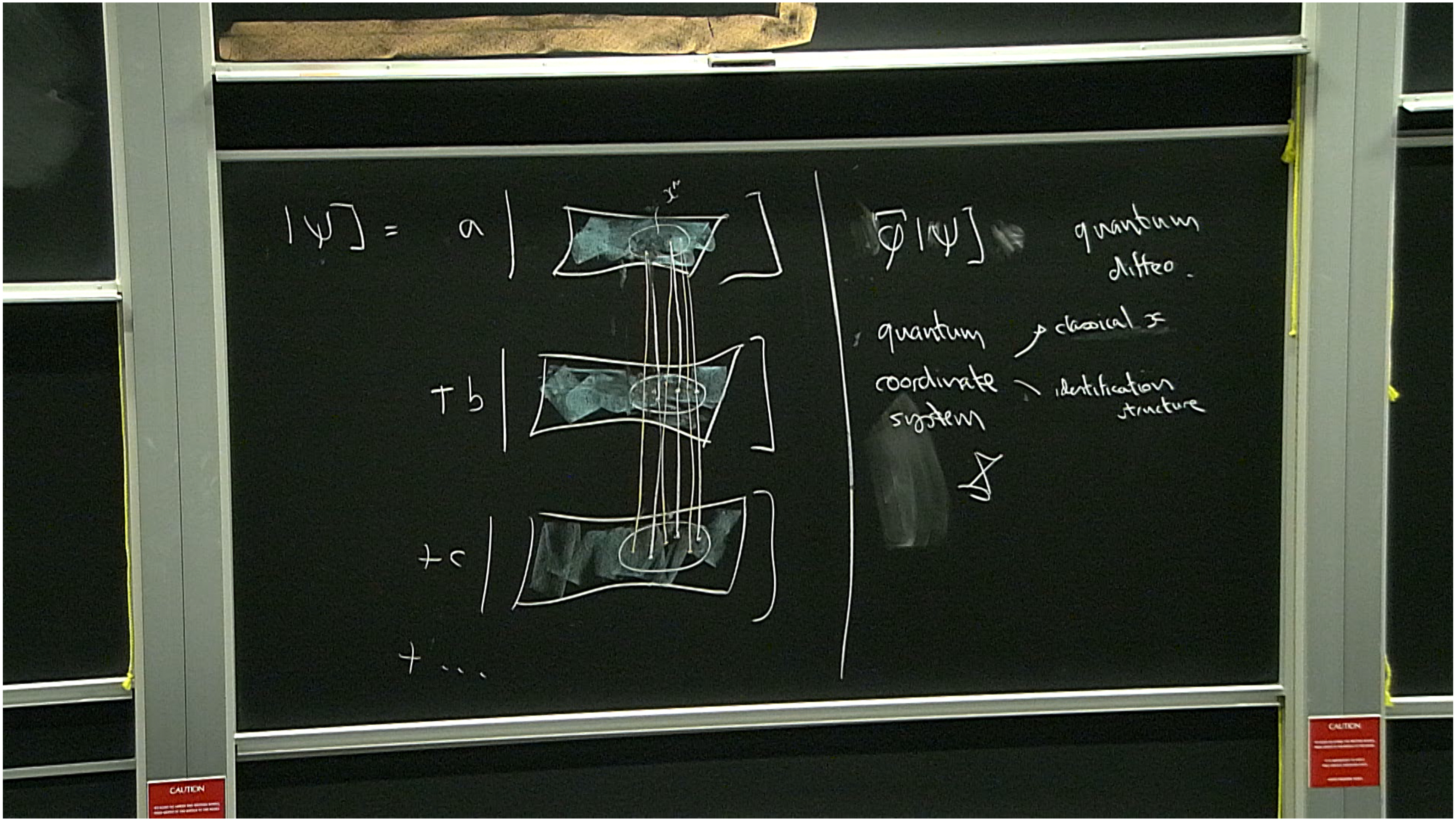

Classical
The Equivalence Princ. For any point, it is possible to find a coordinate system wrt which we have inertial behavior in the vicinity of that point
Problem of Rel. Grav.
NG ← RG → SRFTs
GR
Quantum
title of talk
The Quantum Equivalence Principle
for any given point it is possible to find a quantum coordinate system wrt which we have definite causal structure in the vicinity of that point.
Problem of QG
GR ← QG → SRQFT
CAUTION

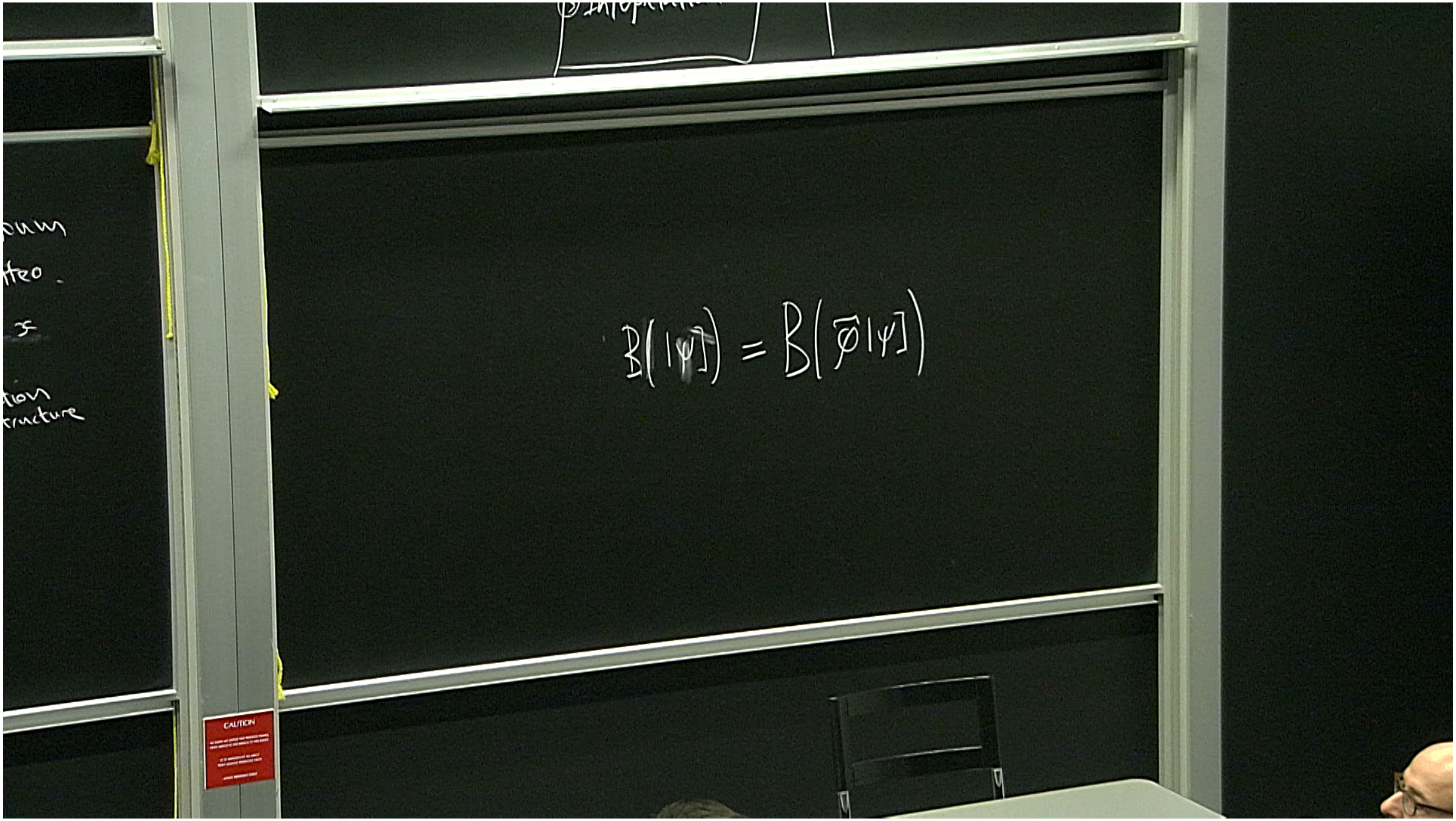


title of talk
e Principle
t is possible to
nate system
definite
n the vicinity
→ SRQFT
Principles
Q. Equiv Princ
princ of gen. Q cov.
Energy conservation
Math
Gen. quant. coords.
Q. Manifolds
Q. Tensor fields
Q. cov derivative
⋮
Elements of QG
1 Prescription
2 Addendum
3 Interpretation
Old theories
SRQFT
GR



Beables
③ Intepretation.
classical description
$u = \{(\Phi, p) : \forall p \in M_u\}$
$\Phi = (g, \text{matter fields})$
$p \to \varphi(p)$
$x^\mu \to x^{\mu'}$
$\varphi^* u = \{(\varphi^*\Phi, q) : \forall q \in \varphi^* M_u\}$
path integral $= \int_{u \in V[u]} Du \, e^{iS/\hbar}$
$|u]$
$|\psi\rangle \leftarrow t$
$|\psi] = \int_{u \in V} Du \, C_u \, |u]$


|ψ] = a| ] + b| ] + c| ] + ...
x^μ
[φ̄|ψ] quantum diffeo.
quantum coordinate system
classical x
identification structure
CAUTION


$B(|\psi]) = B(\bar{\phi}|\psi])$