

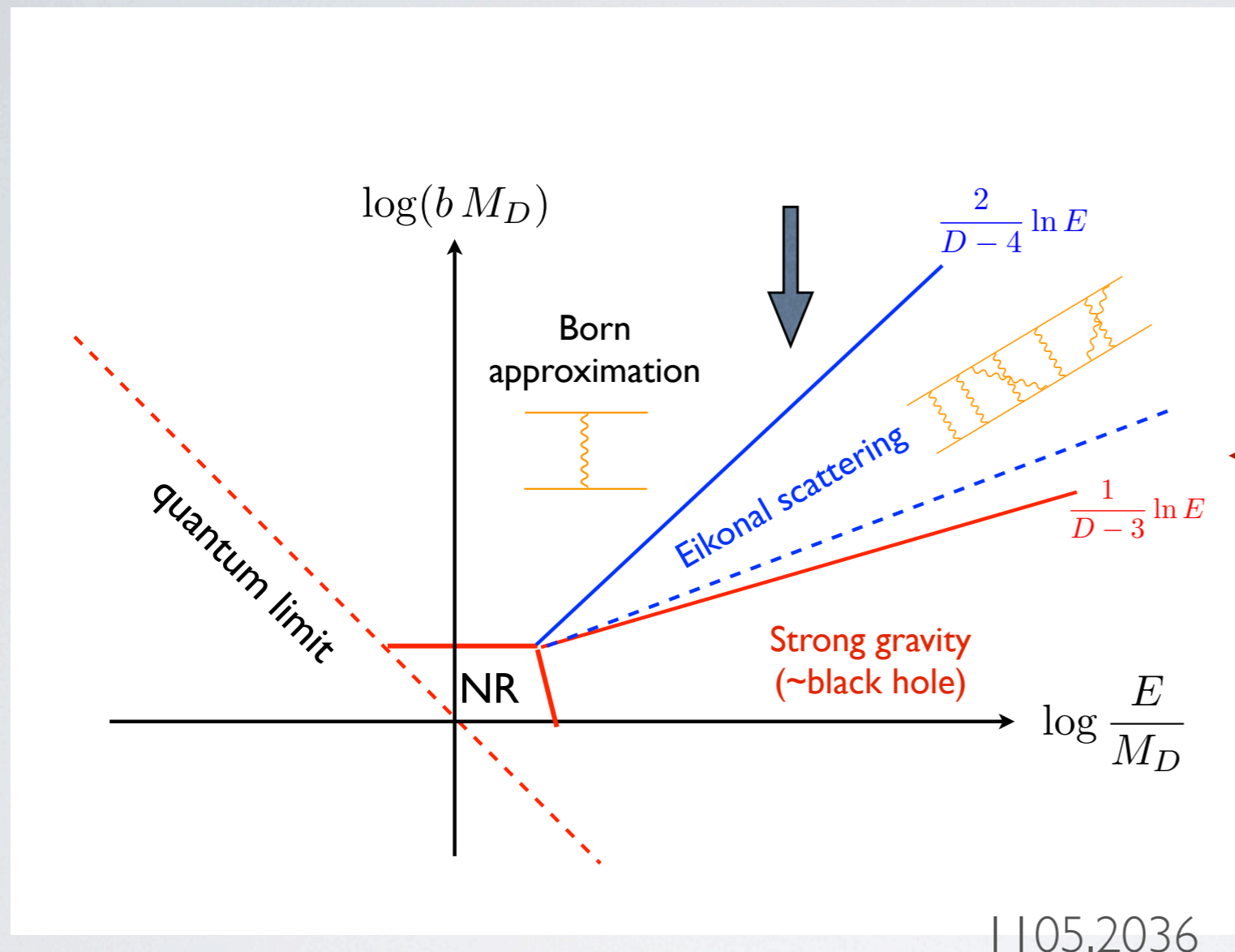
2014



SANTA BARBARA
GRAVITY
WORKSHOP II
March 17-19

BLACK HOLES , QUANTUM INFORMATION,
GRAVITATIONAL SCATTERING, COSMOLOGY
and EMERGENT SPACETIME

Gravitational S-matrix: perturbative to nonperturbative

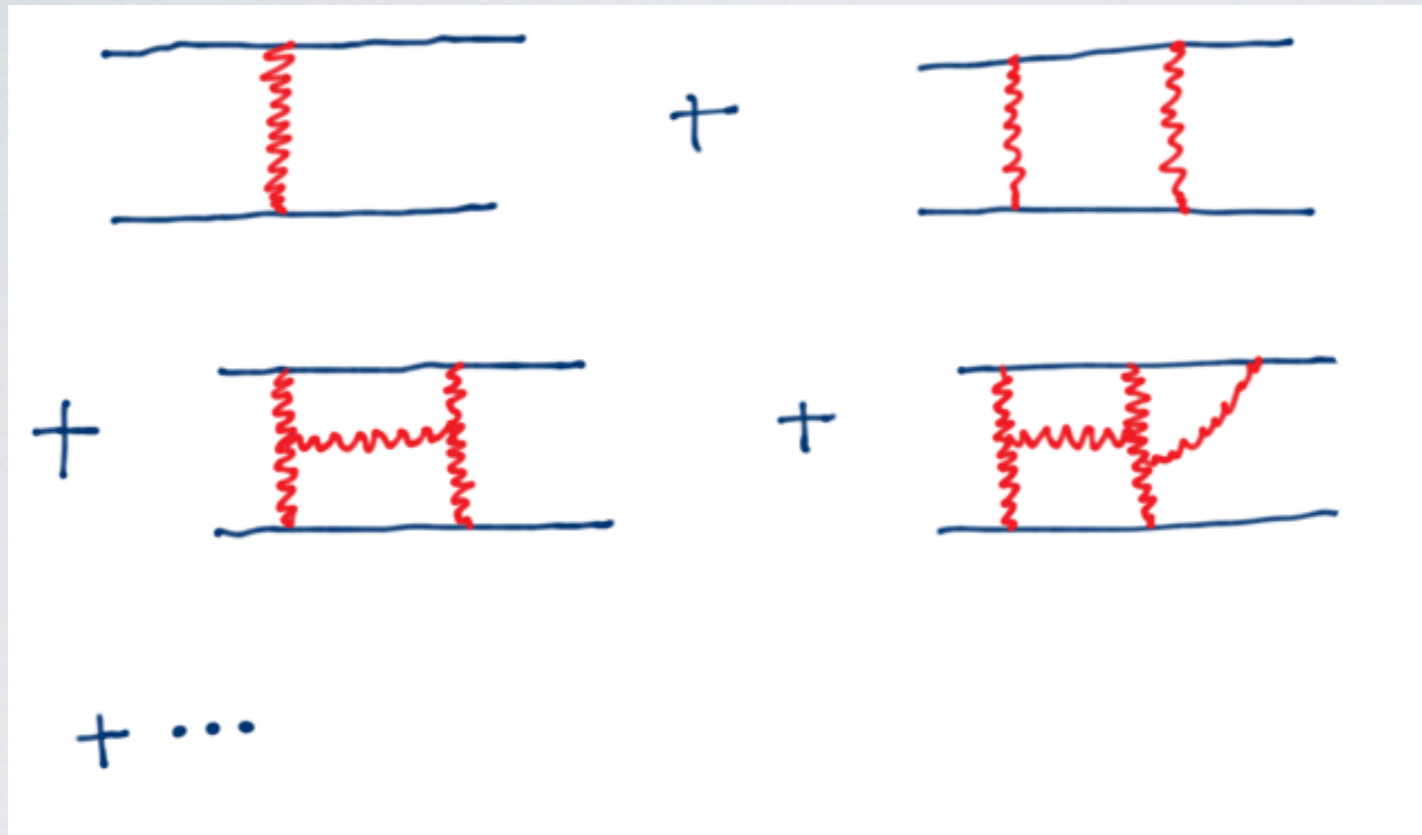


- Need to sum diagrams
- Short distance physics \sim irrelevant (nonrenormalizability)
- Connects to BH mysteries

What guidance do perturbative results give?

Structure relevant to the nonperturbative regime?

E.g. “classical” diagrams



~ scalar diagram expansion in SUGRA?

(No internal loops)

True to 2 loops; beyond?

Just no triangles, or more?

The most profound problems of gravity
are at long distances(?)

Is interesting and nontrivial **perturbative** structure
supplying any clues relevant to the
nonperturbative regime?