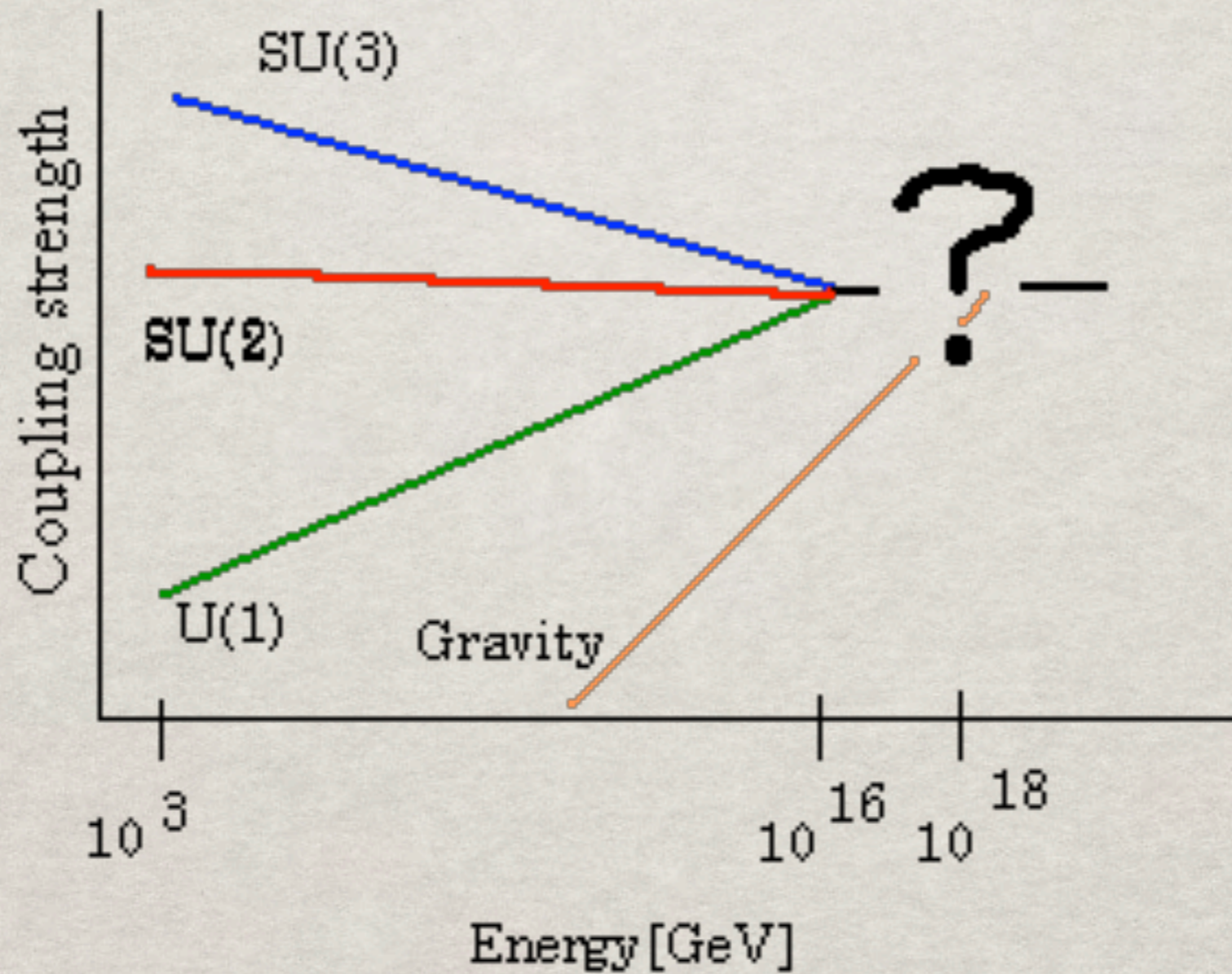


STRINGS

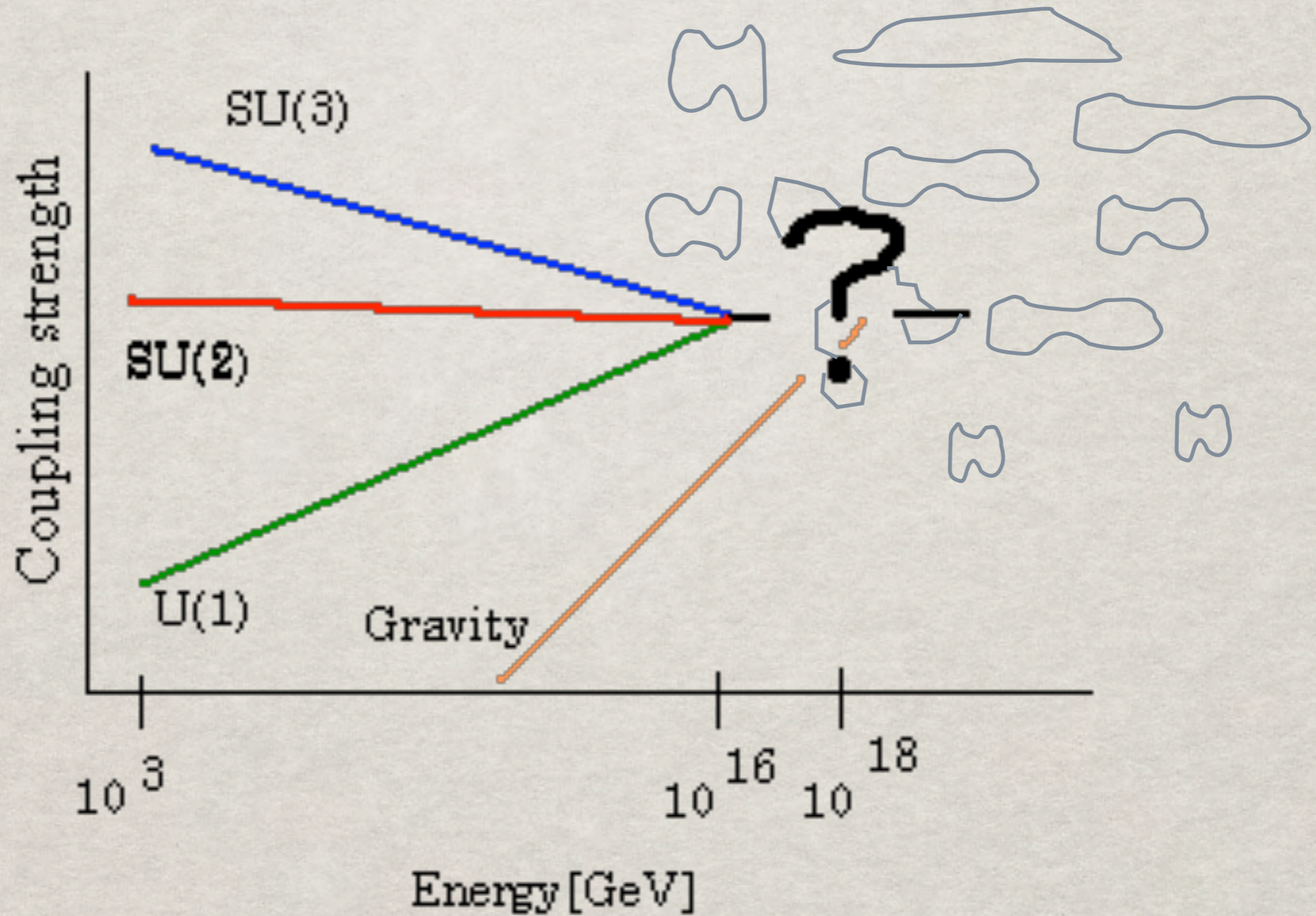
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WHY STRING THEORY?

STRING THEORY



STRING THEORY



- ✱ Quantum theory consistent with Gravity and Gauge Theory
 - ✱ highly non-trivial and compelling result
- ✱ 10D but with a vast 'landscape' of 4D vacua
- ✱ No direct link to experiment e.g. LHC (yet?!)
 - ✱ much work on obtaining MSSM, BSM
- ✱ Become the dominant framework in theoretical fundamental physics

SOURCE OF MANY KEY IDEAS

- ✻ Supersymmetry and supergravity
- ✻ D-branes, brane worlds and extra dimensions
- ✻ Black hole entropy
- ✻ Seiberg-Witten theory
- ✻ Duality
- ✻ AdS/CFT, AdS/CMT, AdS/[insert current fad here]
- ✻ Mathematics (Mirror Symmetry, TQFT, Operator Algebras)

GROUP'S INTERESTS

- ✻ Topological Strings
- ✻ AdS/CFT
- ✻ Branes and QFT
- ✻ String Phenomenology

WHO ARE WE?

STAFF:

- ✻ Luis Alvarez-Gaume
- ✻ Ignatios Antoniadis
- ✻ Neil Lambert (me)
- ✻ Wolfgang Lerche
- ✻ Johannes Walcher

'EMERITUS' STAFF:

- ✻ Sergio Ferrara
 - ✻ Supersymmetry, supergravity, attractor mechanism

FELLOWS:

☼ Matthew Buican:

- ☼ General and phenomenological aspects of SUSY breaking, SCFTs, and $N=2$ gauge theories

☼ Pablo Gonzalez Camara:

- ☼ String Phenomenology: flux compactifications, gauged supergravities, instanton effects, warping, SUSY breaking

☼ Can Kozcaz:

- ☼ AGT relation, surface operators and topological string theory

FELLOWS:

☼ Norihiro Iizuka:

- ☼ Gauge/Gravity Duality; from quantum black holes and cosmology to QCD and condensed matter physics.

☼ Ionnias Papadimitriou:

- ☼ Holography for higher derivative theories and in non asymptotically AdS backgrounds, susy gauge theories

☼ Maximilian Schmidt-Sommerfeld:

- ☼ High-energy gravitational scattering and the information paradox, branes in M-theory

AND INTRODUCING:

☼ James Drummond

☼ from Annecy

☼ Umut Gursoy

☼ from Utrecht

☼ Kyrikos Papadodimas

☼ from Amsterdam

But they will speak for themselves shortly...

ABOUT ME

CIRRICULUM VITAE

- ✻ Born in UK
- ✻ Educated in Canada: BSc U. of Toronto 1992
- ✻ PhD in DAMTP, Cambridge, 1996
- ✻ Post-docs in King's College London, ENS Paris and Rutgers New Jersey
- ✻ Currently on leave from King's College London, Dept. of Mathematics

MY INTERESTS:

- ✻ Supersymmetry: formal issues, usually not in $D=4$.
- ✻ Branes: supersymmetric and non-supersymmetric.
- ✻ M-theory: M2-branes (and hopefully M5-branes)

M-THEORY

- ✻ We now know that 'String Theory' is about much more than strings:
 - ✻ Branes
- ✻ M-theory
 - ✻ 11D
 - ✻ no strings but M2-branes and M5-branes
- ✻ Little is known about microscopic M-theory
 - ✻ strongly coupled

✱ But a great deal of recent progress on M2's

✱ New highly supersymmetric Chern-Simons-Matter Theories [BL][G],[ABJM]

✱ CFT's in $D=3$

✱ IR fixed points of 3D Super-Yang-Mills

✱ Can we learn more about M5's?

✱ Very non-trivial

✱ CFT's in $D=6$

✱ UV completion (fixed point) of 5D Super-Yang-Mills (?)