

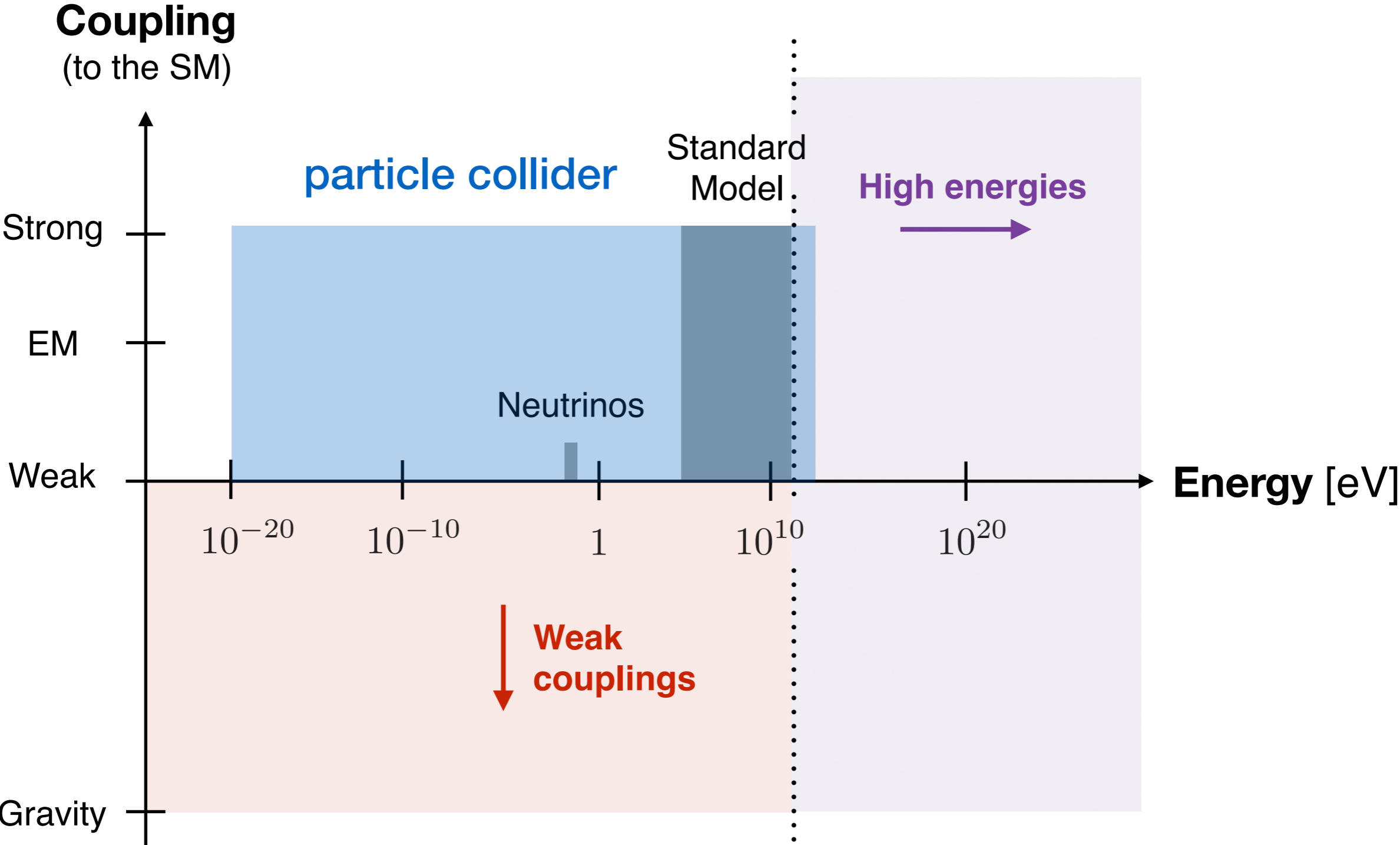
Discussion:

Particle physics around Black Holes

- What can we learn about particle physics from gravitational waves from compact object mergers?
- How are GW probes complementary to other types of observations?
- What are some important unknowns, and how might we make progress on resolving them?
- How should the gravitational wave/fundamental physics community collaborate to make progress?

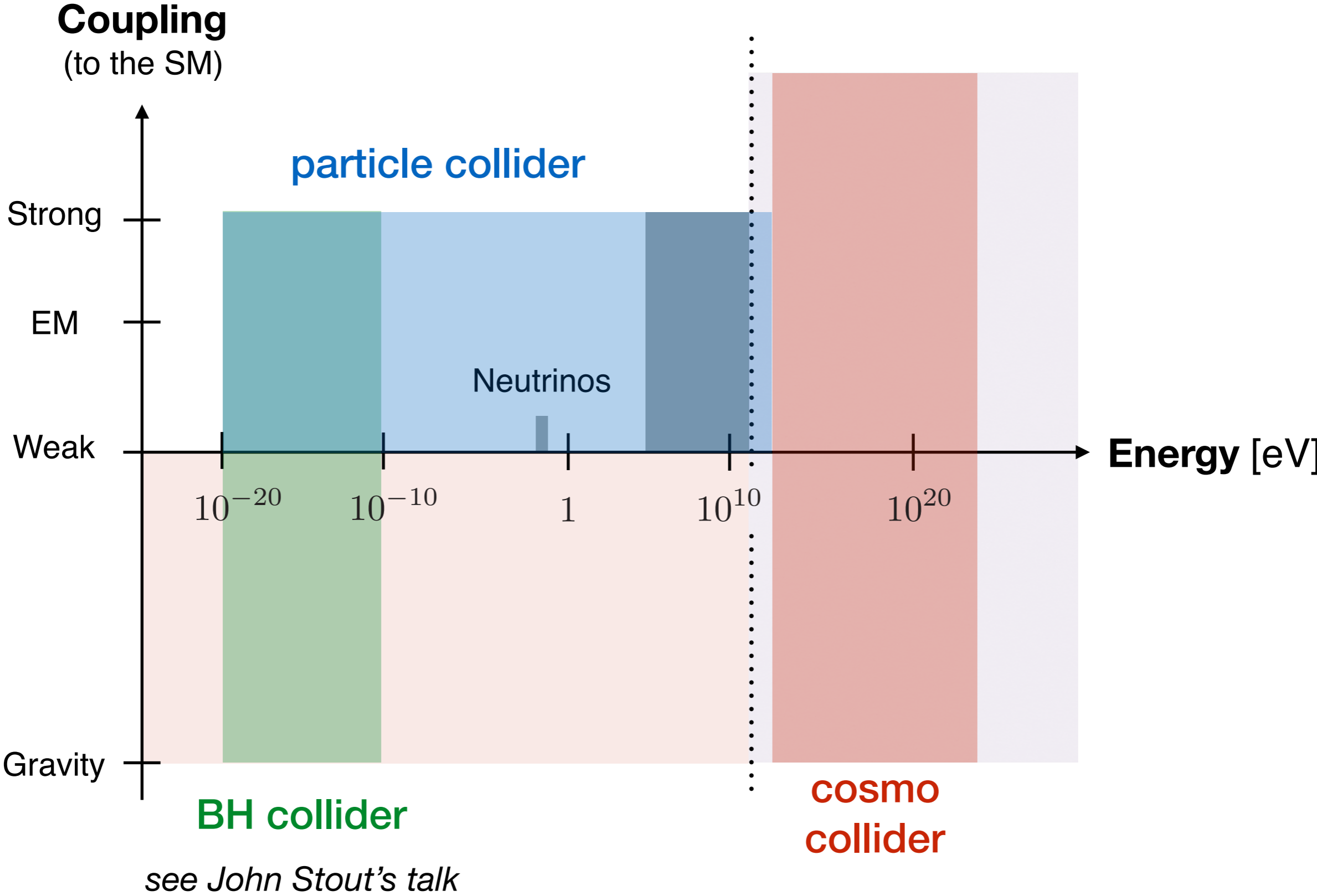
Searching for New Physics

DB, Chia, Porto and Stout [to appear]



Searching for New Physics

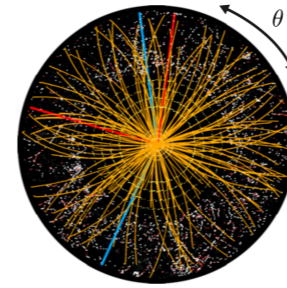
DB, Chia, Porto and Stout [to appear]



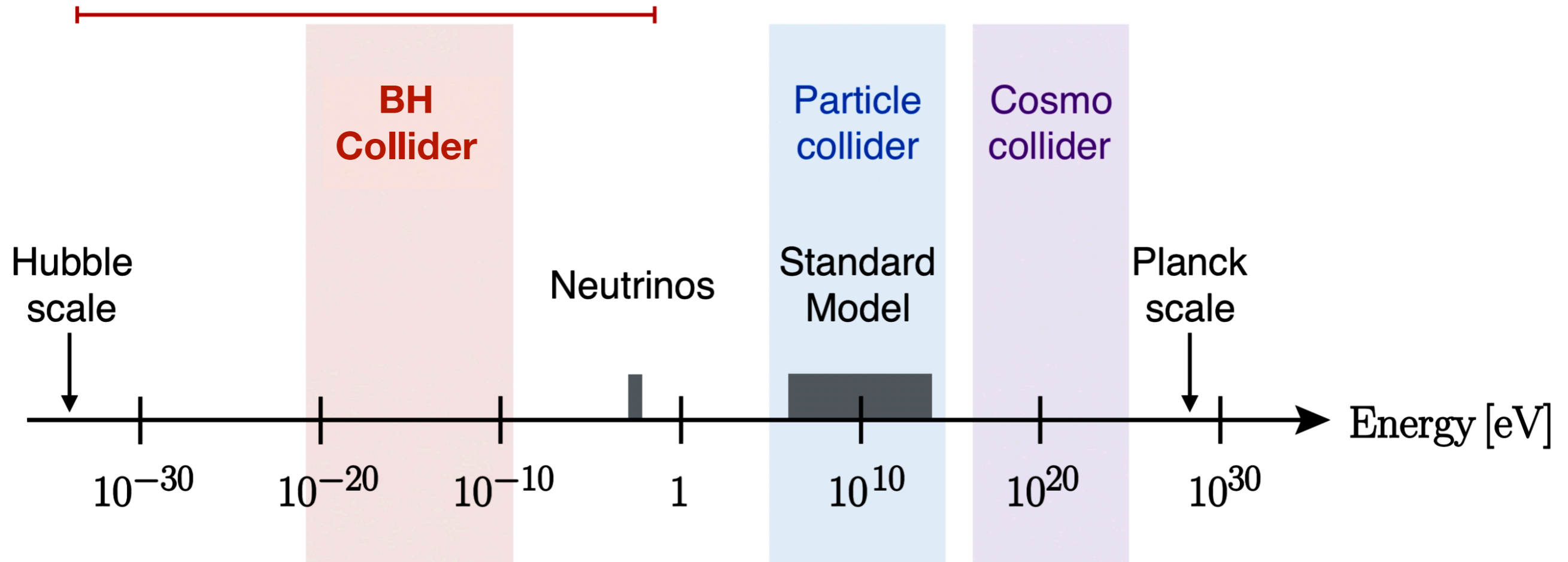
GWPD for Beyond the Standard Model (BSM)

Gravitational Collider Physics

(Baumann, Chia, **RAP**, Stout, to appear)



Ultra-light/Weak-coupling Frontier



Probing ultralight bosons with binary black holes

Daniel Baumann, Horng Sheng Chia, and Rafael A. Porto

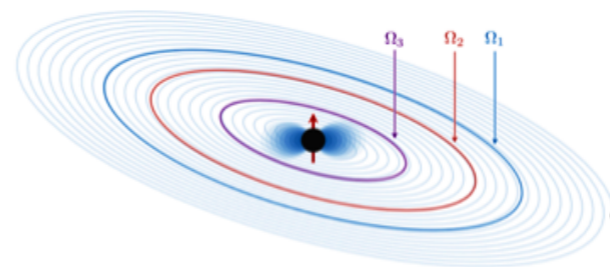
Phys. Rev. D 99, 044001 (2019)

Published February 4, 2019

Physics See Synopsis:

Black Holes Could Reveal

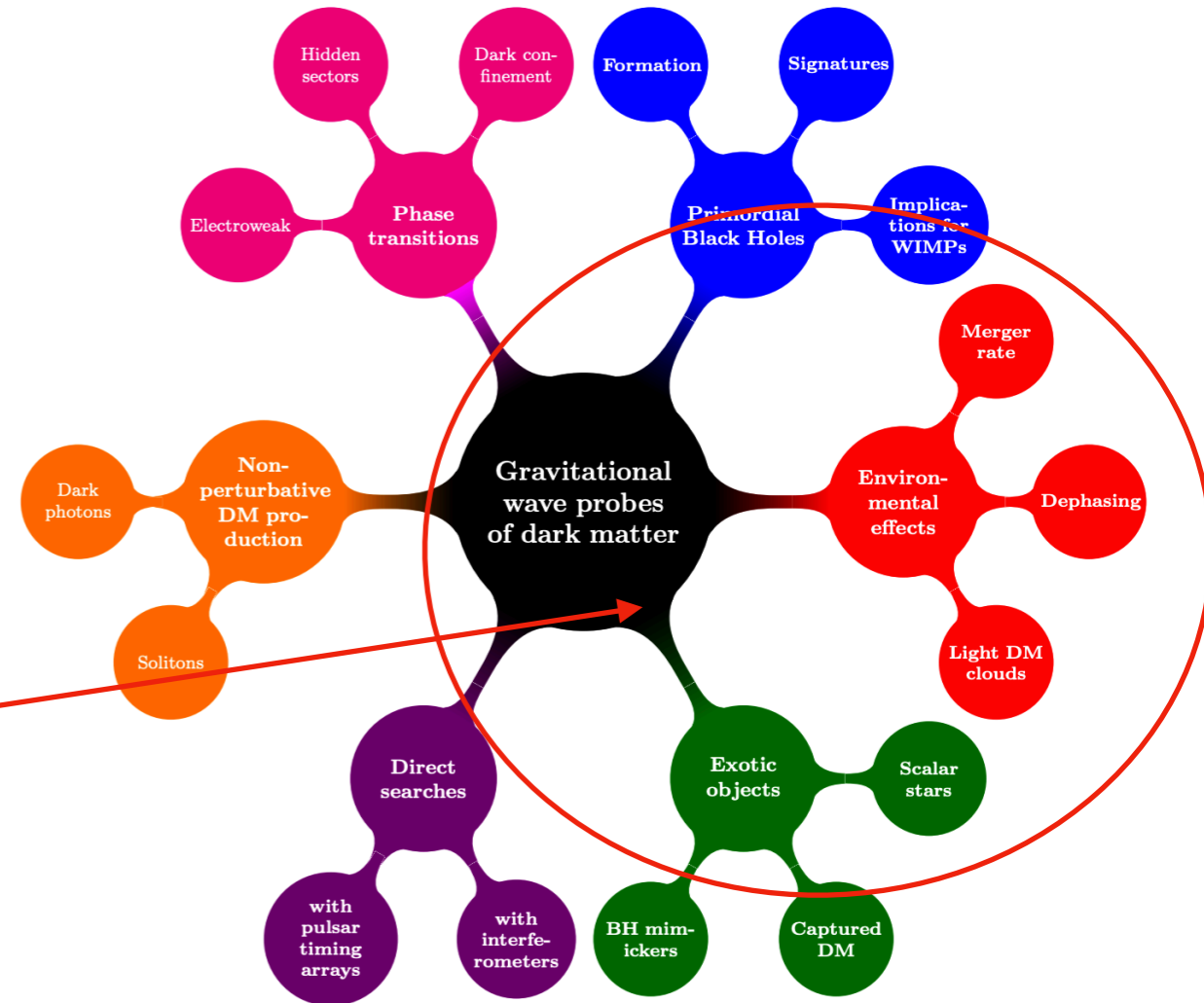
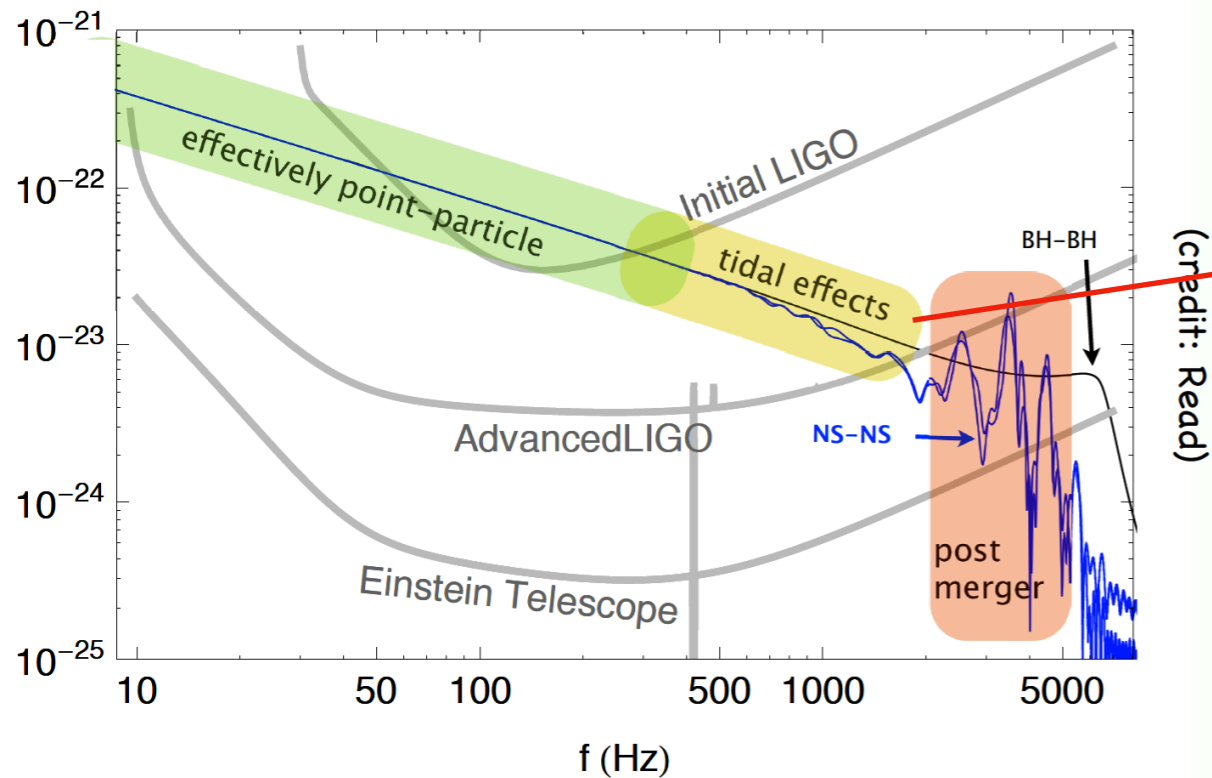
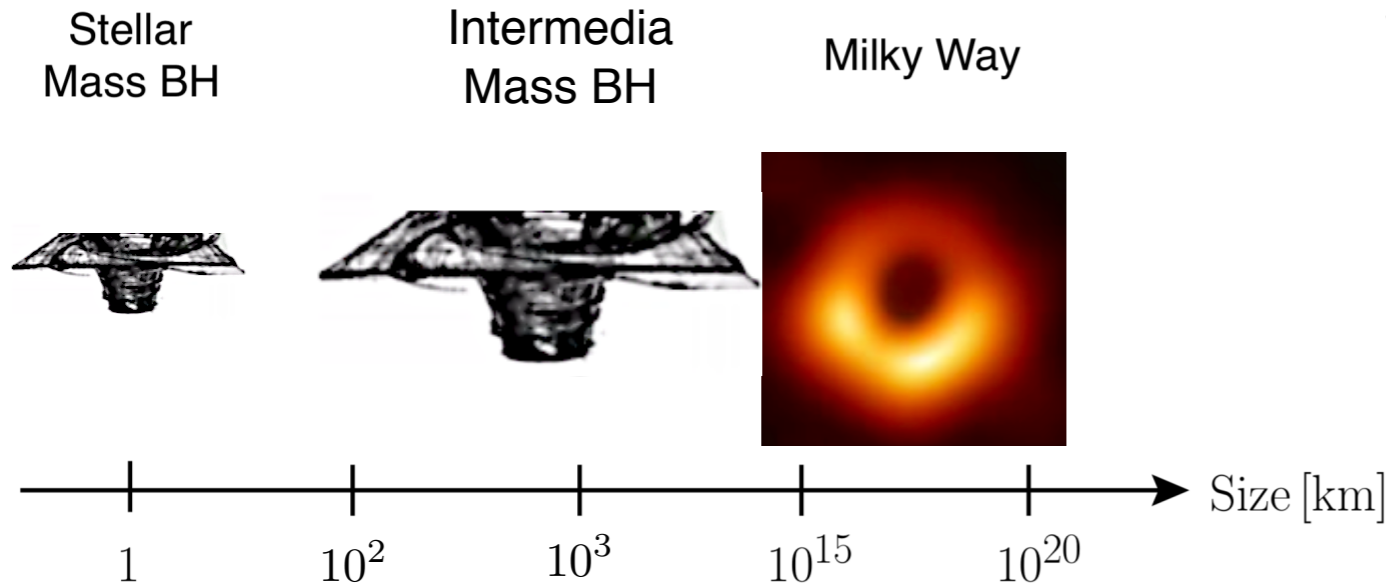
New Ultralight Particles



Gravitational Collider Physics

Gravitational wave probes of dark matter: challenges and opportunities

Gianfranco Bertone,^{1,*} Djuna Croon,^{2,†} Mustafa A. Amin,^{3,‡} Kimberly K. Boddy,^{4,§} Bradley J. Kavanagh,^{1,¶} Katherine J. Mack,^{5,||} Priyamvada Natarajan,^{6,**} Toby Opferkuch,^{7,††} Katelin Schutz,^{8,‡‡} Volodymyr Takhistov,^{9,§§} Christoph Weniger,^{1,¶¶} and Tien-Tien Yu^{10,***}



Fortschr. Phys. 64, No. 10, 723-729 (2016) / DOI 10.1002/prop.201600064

The tune of love and the *nature(ness)* of spacetime

Rafael A. Porto*

The effective field theorist's approach to gravitational dynamics

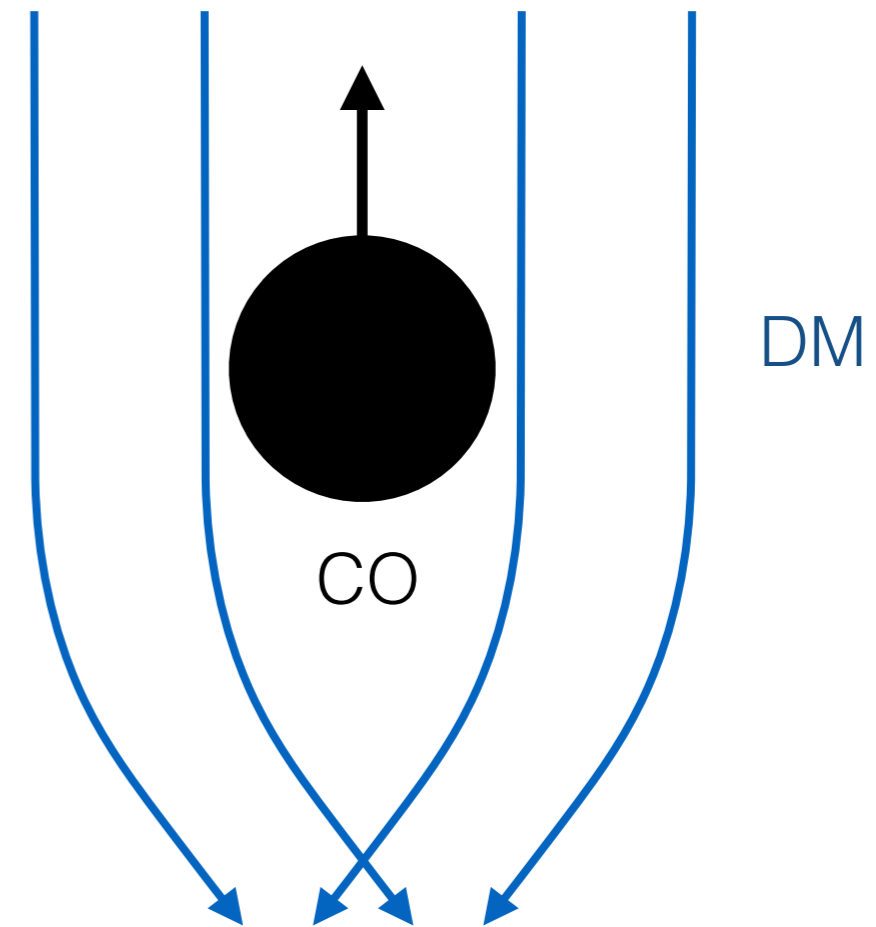
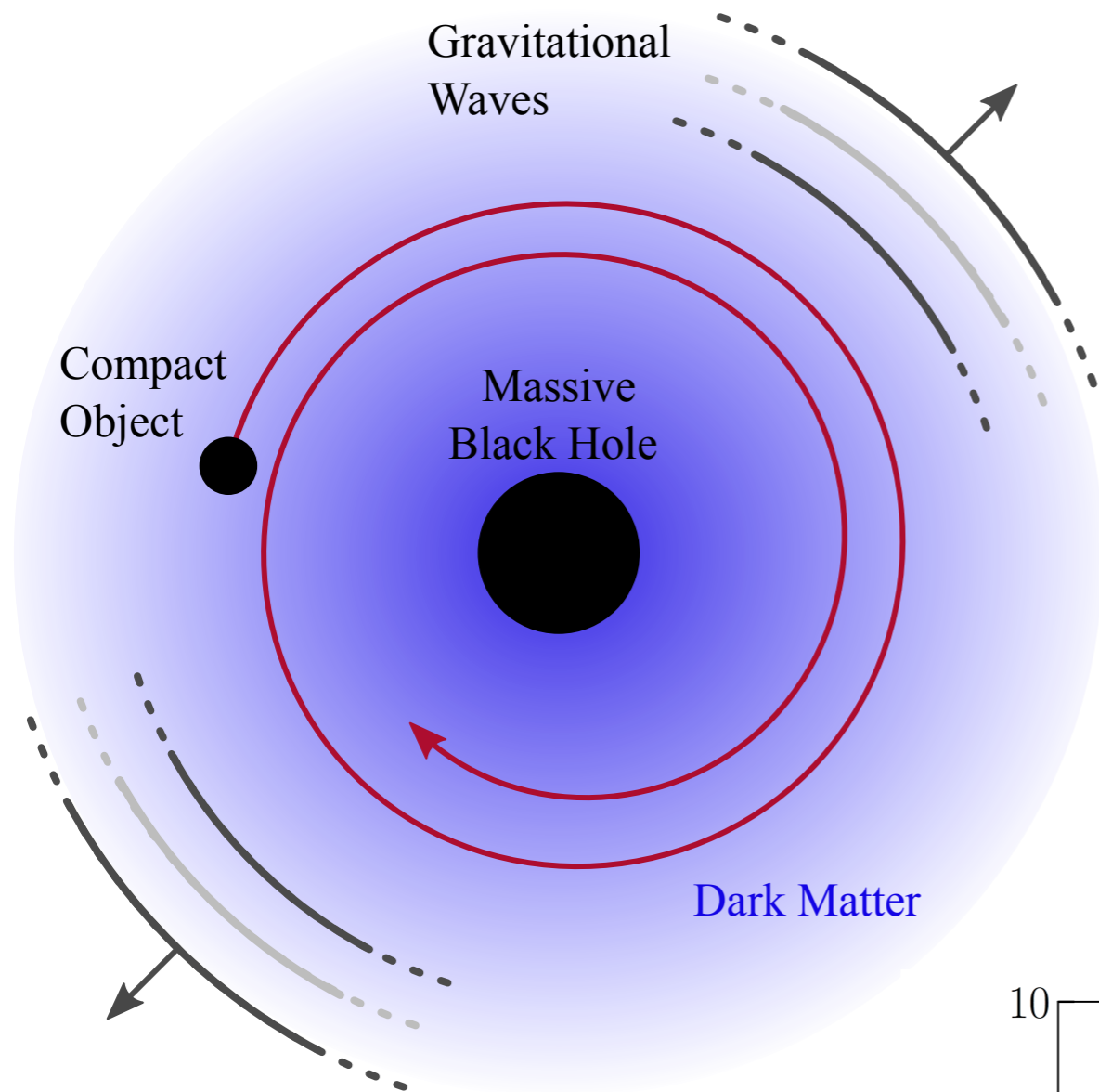
Physics Reports

Rafael A. Porto

Volume 633, 20 May 2016, Pages 1-104



Environmental effects of Dark Matter around Black Holes



Hope for detection with LISA...

See also talks by:

- Peter Johansson [Tuesday 14:30]
- Otto Hannuksela [Tuesday 12:15]
- Tom Edwards [Tuesday 16:30]

