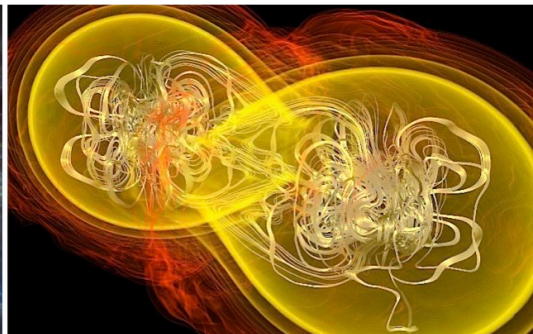
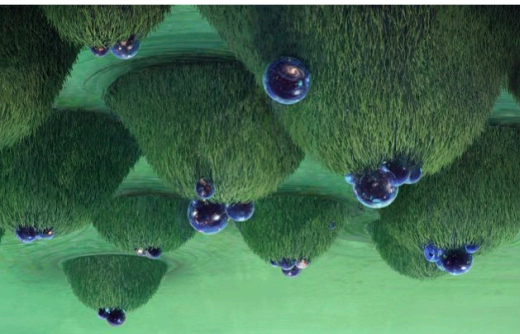


# A new spin on probing disformal scalar fields



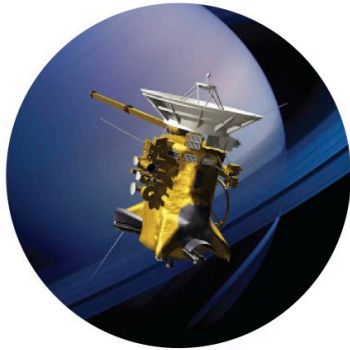
**LEONG KHIM WONG**

with PHILIPPE BRAX, ANNE-CHRISTINE DAVIS & SCOTT MELVILLE

$$S = S_m[\tilde{g}_{\mu\nu}, \Psi] + \int d^4x \sqrt{-g} \left[ \frac{M_{\text{Pl}}^2}{2} R - \frac{1}{2} (\partial\phi)^2 + \dots \right]$$

$$\tilde{g}_{\mu\nu} = \left[ 1 + \frac{\bar{c}\phi}{M_{\text{Pl}}} + \dots \right] g_{\mu\nu} + \left[ \frac{1}{\mathcal{M}^4} + \dots \right] \partial_\mu\phi\partial_\nu\phi$$

**CONFORMAL**
**DISFORMAL**



$$\bar{c}^2 \leq 2.5 \times 10^{-5}$$

- ◆ Velocity suppression
- ◆ Eccentricity suppression
- ◆ **Other probes?**

# SPIN CONSTRAINTS ON THE DISFORMAL SECTOR

$$\Delta\Omega_{\text{NS}} = -\frac{m_{\oplus}\bar{c}^2}{16\pi\mathcal{M}^4 a^3} \frac{(Gm_{\oplus})^{3/2}}{a^{5/2}} + \mathcal{O}(\mathcal{M}^{-8})$$

$$\Delta\Omega_{\text{WE}} \sim 10^{-18} \Delta\Omega_{\text{NS}}$$

