Sample Talk Slides

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Sample Slide

Define

$$\square := \frac{\partial^2}{\partial t^2} - \Delta, \qquad \Delta := \sum_{j=1}^{n} \frac{\partial^2}{\partial x_j^2}.$$

The wave equation on $\mathbb{R}_+ \times \mathbb{R}^n$:

$$\begin{cases} \square u = 0 \\ u(0,x) = f(x) \\ \partial_t u(0,x) = g(x) \end{cases}$$

Sample Slide II

Suspose that

- $\Box u = 0$
- For every t, $u(t,x) = 0$ for $|x|$ large

Then,

$$E[u](t) := \frac{1}{2} \int \left(|\partial_t u|^2 + |\nabla_x u|^2 \right) \, dx$$

is constant in t (and equals $E[u](0)$).

Proof.

Literally differentiate with respect to t. $\square$

Sample Slide III

A random theorem, a special case of the main theorem in [1]:

Theorem

Solutions to the homogeneous wave equation on the Schwarzschild space-time enjoy a pointwise decay rate of t^{-3} for compactly-supported Cauchy data.

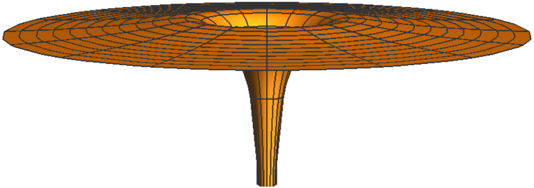

Figure: Schwarzschild black hole embedding diagram

References

[1] D. Tataru, *Local decay of waves on asymptotically flat stationary space-times*, Amer. J. Math. **135** (2013), no. 2, 361–401.