



UNIVERSITY OF MIAMI  
COLLEGE of  
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## Miami Physics Conference 2024

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**Date:** Dec 12-19, 2024  
**Location:** Lago Mar Resort  
**Affiliation:** University of Florida

Stefan Ballmer

### Next-Gen. Gravitational-Wave Detectors: Science, Status, Prospects

#### Abstract

This talk will discuss scientific goals, status and current design work currently ongoing for the US Cosmic Explorer and European Einstein Telescope. I will highlight some exiting aspects of the detector technology behind Cosmic Explorer, such as its quantum-enhanced readout operating a factor of 3 below the standard quantum limit, and prospects of new optical coating materials to lower thermal noise. Along the way I will discuss project timeline, challenges, and milestones – both technological and political.

**Bio:** Stefan Ballmer is Professor of Physics at Syracuse University. He serves as Instrument Science R&D Coordinator for the Cosmic Explorer project.

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