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Type : **Contributed talk**

Can Gravitational Lensing Explain the Extreme Mass Inference of GW231123?

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GW231123 is an exceptional binary black hole merger whose unusually large component masses challenge standard expectations for stellar origins. Additionally, its secondary mass (the less massive one) is in tension with the observed gravitational-wave population. Strong gravitational lensing provides a potential explanation, as magnification biases the inferred source parameters, making a high-redshift, lower-mass system appear much closer and more massive.

In this talk, I will present the results of an investigation into whether or not gravitational lensing can plausibly account for the observed properties of GW231123. We find that reconciling its secondary mass with the observed population would require an extreme magnification. The probability of observing such a magnification is extremely low given current gravitational wave observations, strongly disfavoring the lensing hypothesis. This work reflects Canada's growing role in gravitational-wave astrophysics, contributing to the global effort to understand the origins of black holes and the reliability of parameter inference, a field in which Canadian institutions are increasingly shaping the scientific conversation.

Did you give a contributed talk at CASCA 2026?

No

If you are selected for a poster, would you be interested in giving a short flash talk on your work?

Yes

What is your career level?

PhD

Which keyword describes the area of focus of this talk?

Black holes

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