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# Combined Search for UHE Neutrinos from Binary Black Hole Mergers with the Pierre Auger Observatory

Michael Schimp<sup>1</sup>  
for the Pierre Auger Collaboration  
<sup>1</sup>Bergische Universität Wuppertal, Germany

*What is this contribution about?*

This contribution is about searches for ultra-high energy neutrinos with the Pierre Auger Observatory following up binary black hole mergers.

*Why is it relevant/interesting?*

A multi-messenger observation of binary black hole mergers, which are so far only observed via gravitational waves, could lead to invaluable astrophysical insights.

*What has been done?*

We have combined the **3D localization** information inferred from gravitational wave detections of binary black hole mergers with the **time-dependent neutrino sensitivity** of our observatory to probe their neutrino emission.

*What is the result?*

We have found no neutrino events in coincidence with the sources, leading to upper limits on the neutrino luminosity of the sources as  $E^{-2}$  standard candles, which constrain the neutrino production to luminosities **several orders of magnitude below the gravitational wave luminosities.**

