

**Attachment Number 3 (LIGO-M1400333, VIR-0599A-14)**  
**To the Memorandum of Understanding (LIGO-M0900311, VIR-0109A-10)**  
**between the**  
**IceCube Collaboration**  
**and the**  
**Laser Interferometer Gravitational Wave Observatory (LIGO) Scientific Collaboration**  
**and**  
**Virgo**  
**December 16, 2014**

The Attachment No. 1 to the Memorandum of Understanding (MOU) signed on Jan 26, 2010 between the IceCube Collaboration, the Laser Interferometer Gravitational-Wave Observatory Scientific Collaboration (LSC) and Virgo governs the terms and conditions governing the joint analysis of LSC, Virgo and IceCube data<sup>1</sup> collected during LIGO's S5 science run (covering the period from November 4, 2005 through September 30, 2007) and S6 science run (covering the period from July 7, 2009 through December 31, 2010), Virgo's VSR1 science run (covering the period from May 18, 2007 through September 30, 2007) and VSR2 science run (covering the period from July 7, 2009 through December 31, 2010), and IceCube's 22-string science run (covering the period from May 31, 2007 through April 4, 2008) and 59-string and 77-string science runs (covering the period from May 20, 2009 through December 31, 2010).

With Attachment No. 2 of the same MOU signed on December 31, 2011, the parties of the Memorandum of Understanding agreed to extend the original time frame for a period of three years from the end of the former agreement, covering a period ending on Dec 31, 2014.

With the present Attachment No. 3 of the same MOU, the parties of the Memorandum of Understanding hereby agree to extend the data taking period governed by the MOU to include data collected by LIGO, Virgo and IceCube prior to December 31, 2019, enabling and encouraging the collaboration.

This analysis effort using IceCube data may not continue beyond December 31, 2020 without the explicit extension of this Attachment agreed to by all parties.

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<sup>1</sup> LSC data includes data from the LIGO and GEO detectors.

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David Reitze  
LIGO Laboratory Executive Director  
and LIGO Principal Investigator

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Date

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Albert Lazzarini  
LIGO Laboratory Deputy Director

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Date

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Gabriela González  
LSC Spokesperson

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Date

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Federico Ferrini  
Director of EGO

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Date

*O. Botner*  
\_\_\_\_\_  
Olga Botner  
IceCube Collaboration Spokesperson

*5/01 - 2015*  
\_\_\_\_\_  
Date

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Fulvio Ricci  
Virgo Spokesperson

*09/03 /2015*  
\_\_\_\_\_  
Date

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Bernard Schutz  
GEO 600 Principal Investigator for Data Analysis

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Date