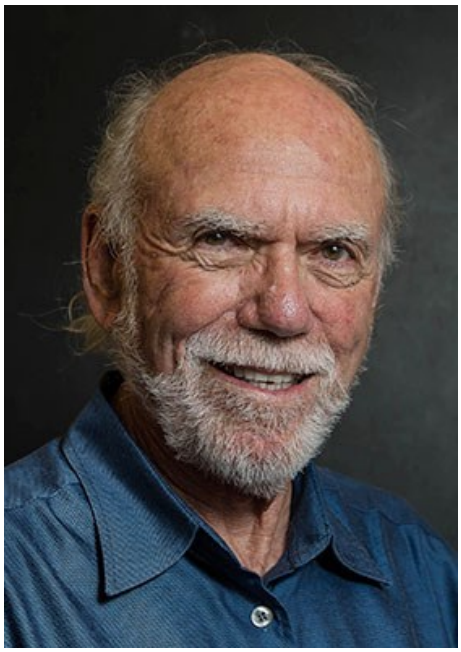
Barry C. Barish - Interview

Interview, October 2017



"The actual size of the signal was about one thousandth the size of a proton!"

Telephone interview with Barry C. Barish following the announcement of the 2017 Nobel Prize in Physics on 3 October 2017. The interviewer is Adam Smith, Chief Scientific Officer of Nobel Media. In the interview, Barry C. Barish reflects on the incredible sensitivity of the instrument used to make the discoveries which led to this year's Nobel Prize in Physics.

Transcript of the interview

[Barry C. Barish]: Hello?

[Adam Smith]: This is Adam Smith calling from Nobelprize.org, the website of the Nobel Prize in Stockholm. Well first of all congratulations on the award of the Nobel Prize.

[Barry C. Barish]: Oh thank you. Of course I'm humbled and thrilled.

[Adam Smith]: How did the news come to you?

[Barry C. Barish]: I guess a telephone call about 10 minutes ago, just before they started the session I guess. So I learnt just before you learnt, I guess.

[Adam Smith]: It really couldn't have arrived any faster, the news, because the announcement of gravitational waves was only made last year.

[Barry C. Barish]: [Laughs] Yeah.

[Adam Smith]: Putting LIGO together and getting this result took many decades and an awful lot of work. Where did that dedication come from?

[Barry C. Barish]: I think that's a harsh question to answer. I think there's a personal part – you have to be someone who doesn't need instant gratification. But I think the scientific goals and the technical challenges were the two things that equally motivated me. The technical challenges were technical challenges that were not unbeatable; it was just that we had to learn how to do things, and how to build a sensitive enough device. That took us 20 years after we built the first version of the LIGO detector. And of course the science is unbelievable, so I think it is not hard to be motivated for 20 years to do the kind of science we're starting to be able to do.

[Adam Smith]: The precision of this instrument is quite unbelievable, isn't it.

[Barry C. Barish]: Yes it is, the size of the effect that we measured from the first event, the merging of two black holes, the actual size of the signal was about one thousandth the size of a proton, what it did to our apparatus. So we were able to measure a movement, or change of length of the apparatus, by the passage of the gravitational waves to that accuracy and then measure its form well enough to decide what that was. So that's pretty unbelievable.

[Adam Smith]: It's a testament to human ingenuity isn't it?

[Barry C. Barish]: And a testament to modern technology and science. I think this couldn't have been done 50 years ago, or 20 years ago, or 30 years ago. It's taken the best modern lasers and control and engineering to be able to do it.

[Adam Smith]: Will we be welcoming you to Stockholm in December?

[Barry C. Barish]: Yes of course.

[Adam Smith]: Lovely. It was great to talk to you. Congratulations again.

[Barry C. Barish]: OK, thank you. Bye bye.

[Adam Smith]: Bye bye.