

Gravitational Waves

A 32 bar reel for three couples in a four couple longwise set.

The dance celebrates the first direct detection by the LIGO detector of gravitational waves produced by two black holes circling and merging together over a billion light years from Earth. This event was observed on 14 September 2015 almost exactly a century after the existence of gravitational waves was predicted by Einstein in his General Theory of Relativity.

Bars 5-12 represent the LIGO detector which has two 4 km long arms arranged in an L shape. Bars 13-16 show the circling and merging black holes. The wiggly reels are the resulting gravitational waves and the final circle is for the Nobel Prize medallions awarded by the Swedish Academy in recognition of this amazing scientific achievement.

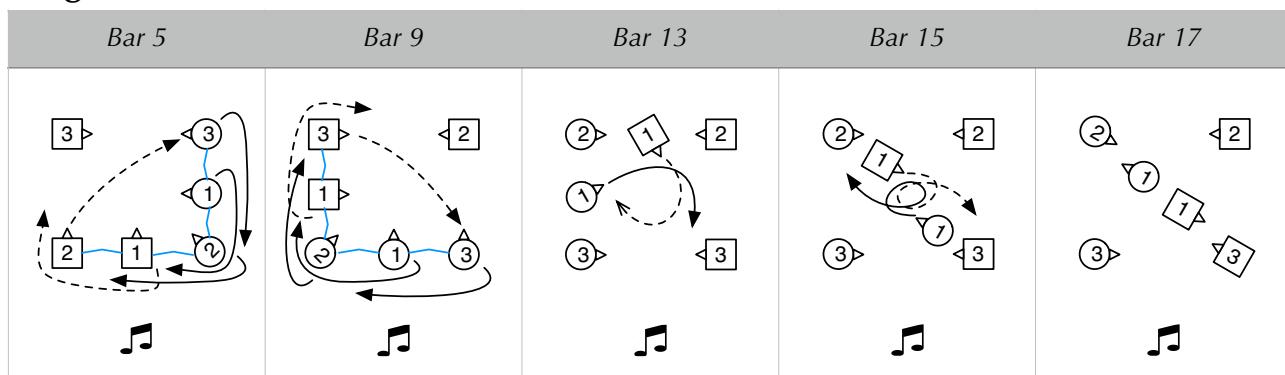
Bars Description

- 1-4 1st couple set to each other. Then 1st man casts off to 2nd place as 1st woman, starting slightly to her left, makes a petronella turn to end facing down in 1st place between 2nd couple who step up.
- 5-8 LIGO (or L-shape) set and link:
 - 2nd and 1st women with 2nd, 1st and 3rd men set taking hands in an L shape. 2nd man at the vertex faces in diagonally with arms at right angles.
 - 2nd woman (with left hand free) dances diagonally across to 3rd man's place while the other four pull right shoulders back and cast clockwise to form a new L shape with 2nd man again at the vertex between 1st and 3rd women on the women's side and 1st and 3rd men across in 1st place.
- 9-12 Repeat the LIGO set and link figure of bars 5-8 from new places. This time 3rd woman dances diagonally across to 1st man's place as the other four cast clockwise. The corners are now diagonally opposite their starting places, 1st man is in 2nd place on the women's side and 1st woman is on the centre line in 3rd place.
- 13-16 1st couple dance clockwise around each other, passing right shoulder, starting by making a wide loop about half way round, moving into the centre. Then coming towards each other they birl (or turn tightly about one and a half times with the right hand) to end facing their 1st corner position (3rd corner person).
- 17-20 1st couple dance half a diagonal reel of four with 1st corners, starting by passing right shoulder. They then pass left shoulders with each other (a wave-like wiggle) to face 2nd corner position (4th corner person).
- 21-24 1st couple dance half a diagonal reel of four with 2nd corners, starting by passing right shoulder. They then pass right shoulders with each other to end in 2nd place on their own side.
- 25-32 All circle six hands round and back, ending in the order 2,1,3.

Music

- Original tune: Einstein's Prediction (Ian Robertson).
- An 8x32 recording of this is available via <https://my.strathspey.org/u/murrough/recording/>
- The video used: 8x32 Reels (Marian Anderson and her band: Bordering on Scottish, track 5).

Diagrams (music at the bottom)



Optional Extra

- If 3rd and 2nd women do not want to rest (as the observing physicists) in bars 5-8 and 9-12 respectively they may set and turn about singly on the spot, pulling right shoulder back. There is no associated symbolism for this.

Reel

Einstein's Prediction

Original tune for the dance "Gravitational Waves"

Ian Robertson

The sheet music is in G major (three sharps) and 4/4 time. It features eight staves of musical notation. Below each staff, the corresponding chords are written in capital letters. The chords are: A, A/E, A, A⁷, D, A/C[#], Bm, E⁷; A, A/E, A, A⁷, D, A/C[#], E^{7/B}, A; D, A/C[#], Bm, D, A, F#m, Bm, E⁷; D, A/C[#], Bm, D, A, F#m, E⁷, A; A, A/E, A, A⁷, D, A/C[#], Bm, E^{7/B}, A.

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