

# Astronomy & Music

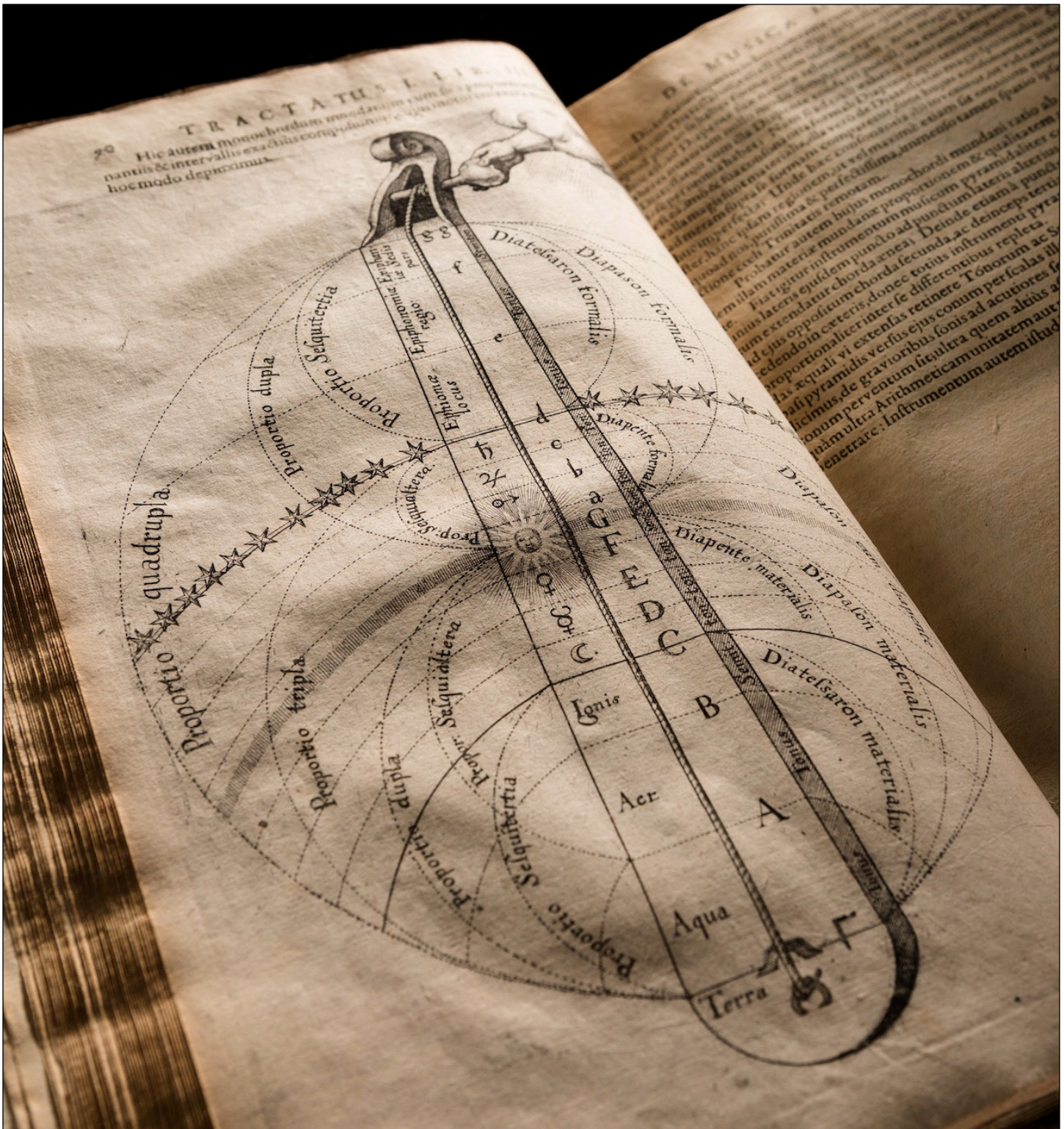
## Introduction to the Duochord

Learning Leaflet: Stand-up Activities

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Robert Fludd, *Utriusque cosmi maioris scilicet et minoris* (Oppenheim, 1617-21)  
“On the Two Worlds, namely, the Macrocosm and the Microcosm”

Exhibit: Galileo's World | Gallery: Music of the Spheres, no. 4

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The diagram is a circular representation of the Pythagorean theory of music. It is divided into four main sections by a vertical axis and two horizontal axes. The vertical axis is labeled with the elements: Terra (Earth), Aqua (Water), Aer (Air), Ignis (Fire), and various musical notes (A, B, C, D, E, F, G, A, B, C, D, E, F, G, A). The horizontal axes are labeled with musical intervals: Proportio quadrupla, Proportio tripla, Proportio dupla, and Proportio sesquialtera. The diagram also includes labels for 'Diapason', 'Diapente', 'Diapente cum diapente', and 'Diapason materialis'. The diagram is a historical representation of the Pythagorean theory of music, showing how musical intervals correspond to simple numerical ratios.



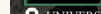
The ancient Pythagoreans envisioned the heavens as celestial spheres rotating according to harmonious music. For Robert Fludd, the universe was a monochord, its physical structure unintelligible without an understanding of music. Galileo's father, Vincenzo Galilei, experimented with pitch and tuning.

## Mathematical Octave - 2:1

- ## Mathematical Perfect Fifth - 3:2

- ### Mathematical Perfect Fourth - 4:3

1. Locate the markers on the duochord that divide the string into *four equal segments*.
2. Place a moveable bridge over one marker dividing the string into segments of  $\frac{1}{4}$  and  $\frac{3}{4}$  of its entire length. Pluck the long side, or  $\frac{3}{4}$  of the divided string, to produce an interval of a perfect fourth higher than the unaltered string.

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