Towards a 4D Breast Phantom for Radiotherapy QA

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Motivation

- Motion in imaging and treatment can pose an issue..
  - Breath hold/gated treatments
  - CyberKnife motion-tracking
  - Motion artifacts in IGRT
- Currently, only available QA phantom is by QUASAR
  - Very expensive
  - Not full 4D capabilities
- Desire for open-source alternative

Overview of Project

- Want to
  - Take in a breathing trace
  - Convert it into mechanical motion
- Needs to be
  - Standalone
  - "Perfect" temporal and spatial accuracy
  - Open-source and cheap
- How to?
  - Raspberry Pi $\rightarrow$ Stepper motor
  - Rotational motion $\rightarrow$ Linear motion

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