Scintillating Bubble Chamber (SBC) for Detecting Dark Matter

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on behalf of the SBC collaboration
Combination of two technologies

Bubble Chambers

Liquid noble gases
First prototype tested in Northwestern University with 30-g of Xenon
Current Project: 5L of liquid Argon

Objectives:
• Look for low-mass WIMP targets.
• Measure the neutrino floor.
• Lower the sensitivity to backgrounds.
Challenges:

• Design a system that can withstand cryogenic temperatures and extreme pressure cycles.

• Pack all the sensors inside to maximize light, pressure, temperature, and sound collection.

• Calibration required to reach the 100eV threshold.
Current work in progress: SiPMs testing
Timeline

- Finish construction at Fermilab for testing by the end of the year.
- It will be moved to SNOLAB for calibrations and physics runs the next year.
Thank you!