# 振動駆動式マイクロ空気圧弁

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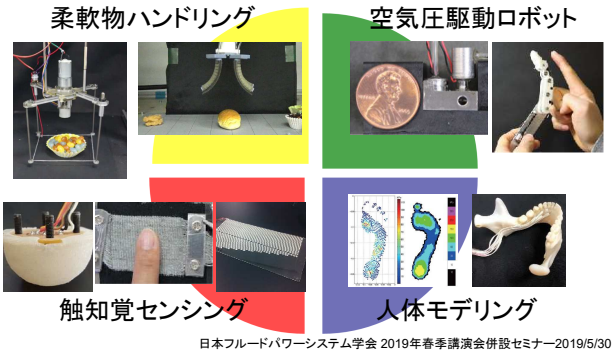
## ソフトロボティクス研究室



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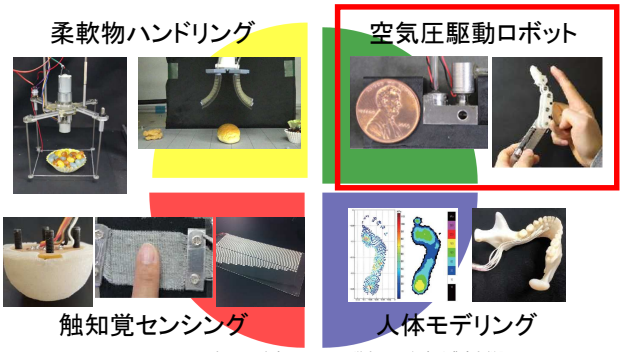
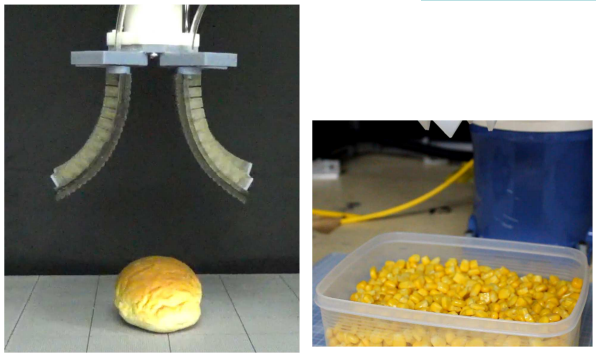


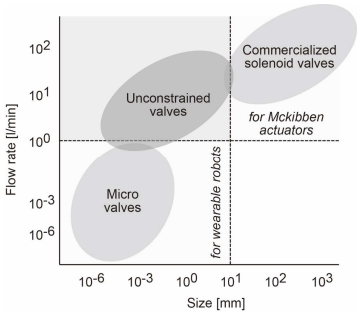



## 空気圧駆動ロボット



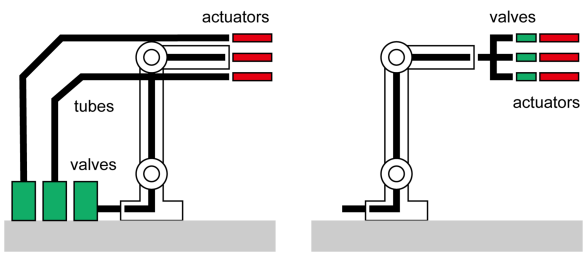


## バルブの現状

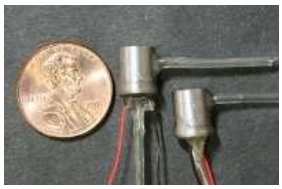




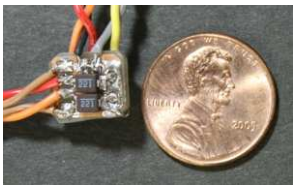

## バルブの小型化



# 無拘束マイクロ空気圧弁



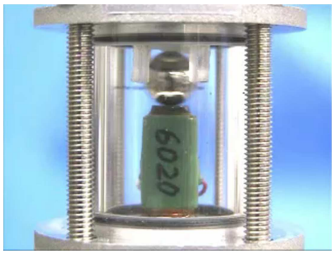
空気圧弁



PZTドライバ

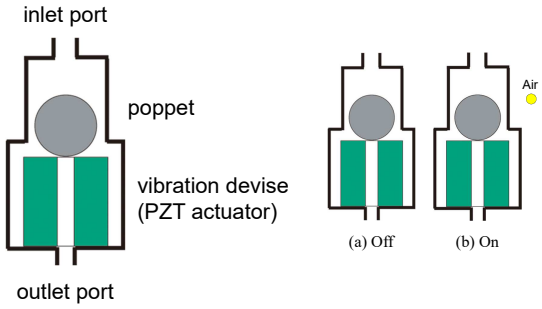


# マクロモデル





# 原理



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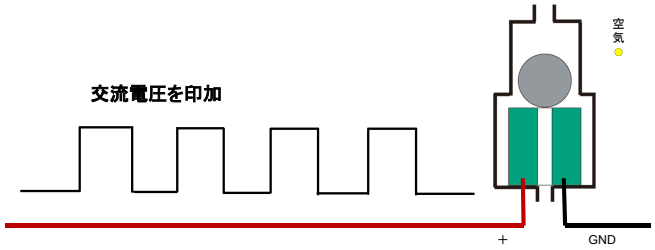
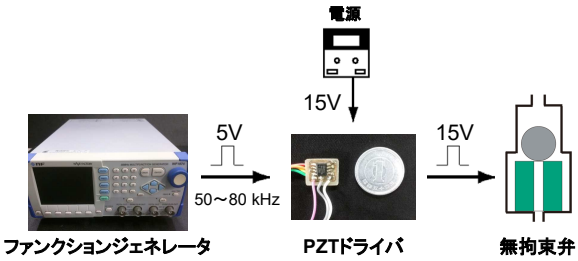


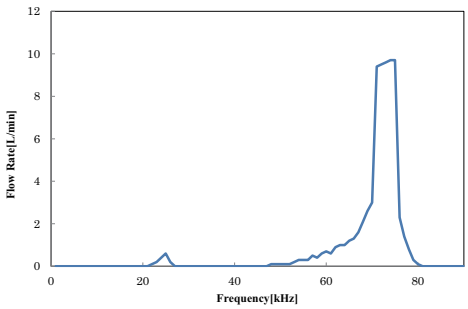



# 駆動方法

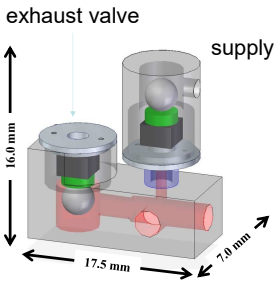


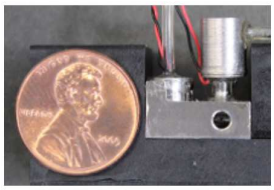



# 駆動周波数 ー 流量



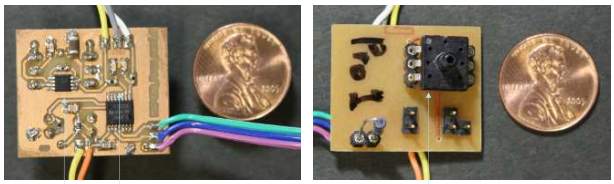
# 三方向弁





# 圧力制御回路



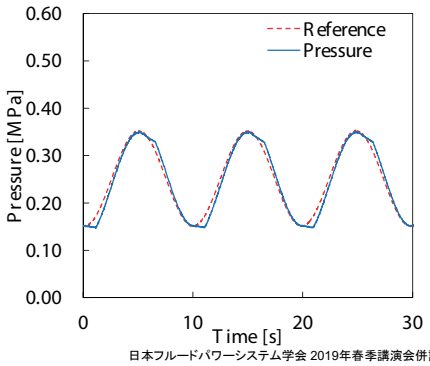
micro controller

pressure sensor

amplifier



# 圧力制御



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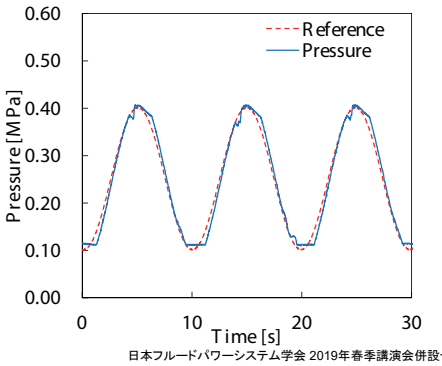
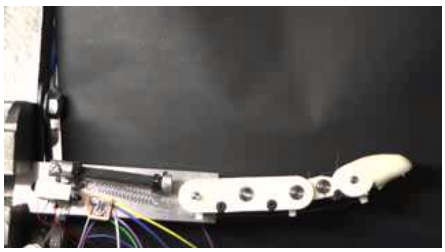




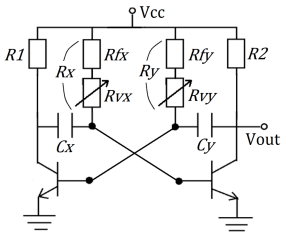

# マッキベンアクチュエータの駆動

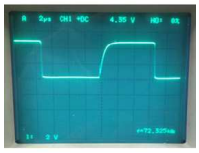




# 小型発振回路

無安定マルチバイブレータ回路



50～80kHz

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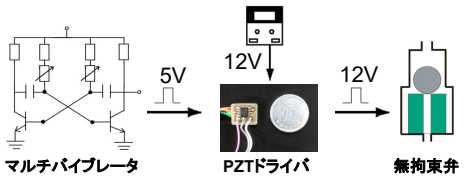
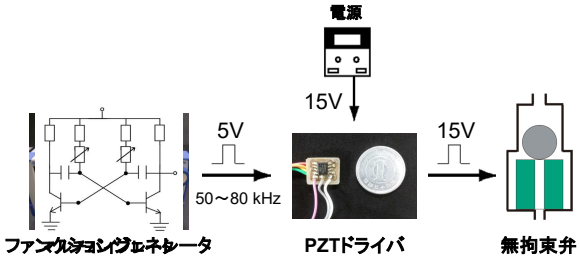



| | マルチバイブレータ使用時の最大流量 | ファンクションジェネレータ使用時の最大流量 |
|---|---|---|
| 無拘束弁1 | 8.5[L/min] | 8.7[L/min] |
| 無拘束弁2 | 8.2[L/min] | 8.4[L/min] |
| 無拘束弁3 | 8.0[L/min] | 8.6[L/min] |

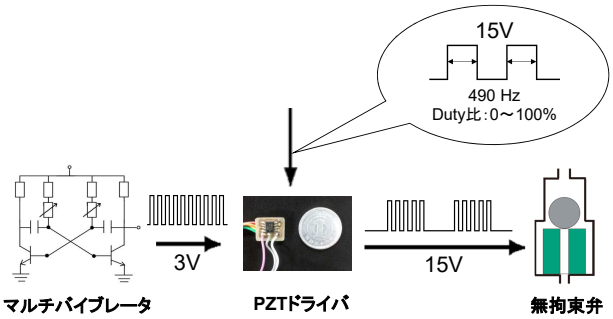


# 駆動方法






# 流量制御



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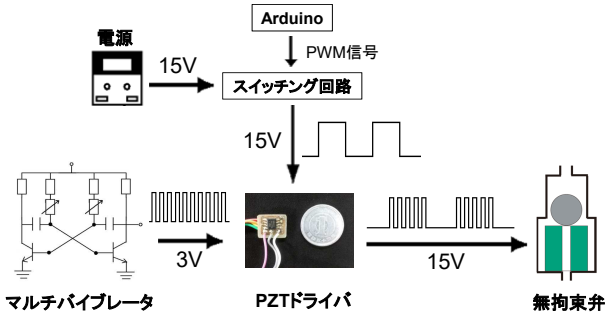




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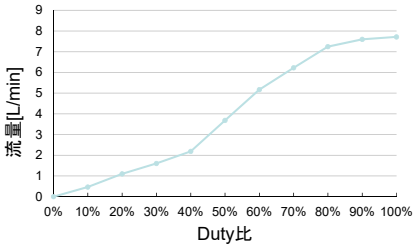




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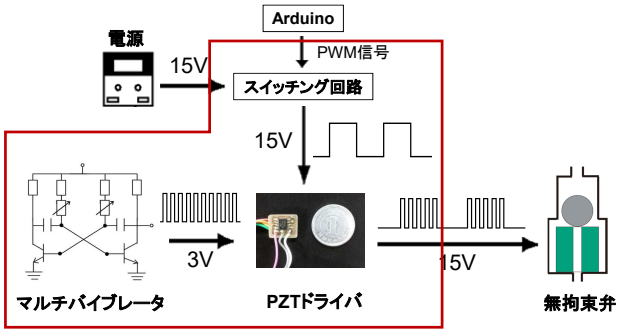

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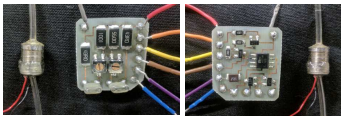
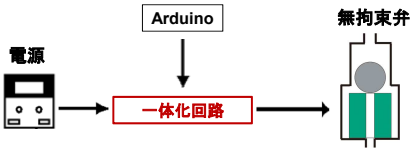


表　　裏



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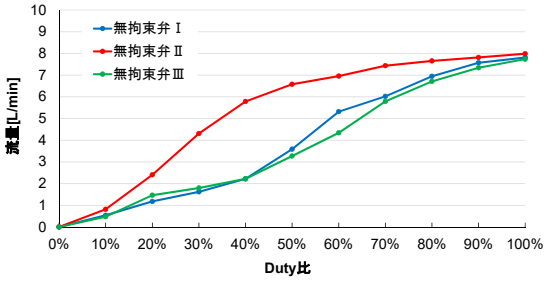
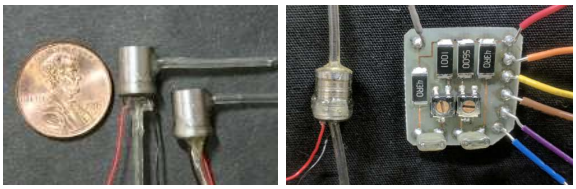





# まとめ



圧力 0.5 MPa　流量 8 L/min