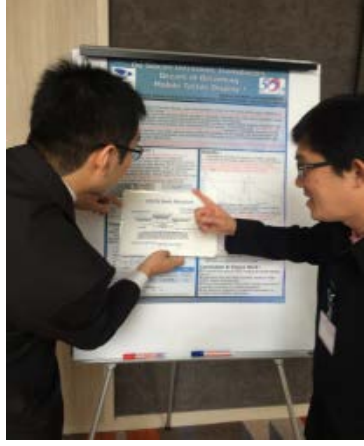

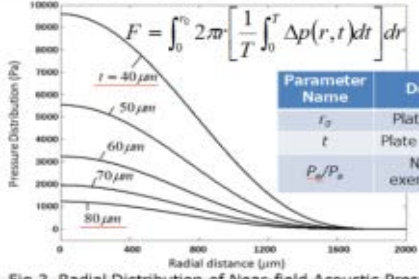


<p>題名</p>	<p>Do Silicon Ultrasonic Transducers Dream of Becoming Mobile Tactile Display?</p>												
<p>掲載雑誌</p>	<p>International Journal of Computing, Communication and Instrumentation Engineering</p>												
<p>著者</p>	<p>Katsuya Shibata , Naoki Kondo</p>												
<p>概要</p>	<p>We examined theoretically the possibility of exploiting the capacitive micromachined ultrasonic transducers (CMUTs) as a tactile display device that generates two-dimensional pressure distribution above their surface via near-field acoustic radiation pressure effect. We found that with slight modification to existing CMUT geometry, 300Pa necessary for invoking tactile sensation is achieved with the spatial resolution of 3.8mm.</p>												
<p>関連画像</p>	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>(2) the momentum equation of Newtonian fluids:</p> $\frac{1}{r} \frac{\partial}{\partial r} (rv_r) + \frac{\partial v_z}{\partial z} = 0 \quad \rho \left(\frac{\partial v_r}{\partial t} + v_r \frac{\partial v_r}{\partial r} + v_z \frac{\partial v_r}{\partial z} \right) = - \frac{\partial p}{\partial r} + \frac{\partial \tau_{rz}}{\partial z}$ <p>The near-field acoustic force F:</p> $F = \int_0^{r_0} 2\pi r \left[\frac{1}{T} \int_0^T \Delta p(r,t) dt \right] dr \quad \Delta p = p - p_s$  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Parameter Name</th> <th>Description</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>r_0</td> <td>Plate radius [m]</td> <td>1.9×10^{-2}</td> </tr> <tr> <td>t</td> <td>Plate thickness [m]</td> <td>$40 - 80 \times 10^{-6}$</td> </tr> <tr> <td>P_s/P_s</td> <td>Normalized exerted pressure</td> <td>0.64</td> </tr> </tbody> </table> <p>Fig.3 Radial Distribution of Near-field Acoustic Pressure vs Radial Distance.</p> </div> </div>	Parameter Name	Description	Value	r_0	Plate radius [m]	1.9×10^{-2}	t	Plate thickness [m]	$40 - 80 \times 10^{-6}$	P_s/P_s	Normalized exerted pressure	0.64
Parameter Name	Description	Value											
r_0	Plate radius [m]	1.9×10^{-2}											
t	Plate thickness [m]	$40 - 80 \times 10^{-6}$											
P_s/P_s	Normalized exerted pressure	0.64											