

EDISON

Electromagnetic Design of
flexible Sensors



Report 90 SLEPC+ABC

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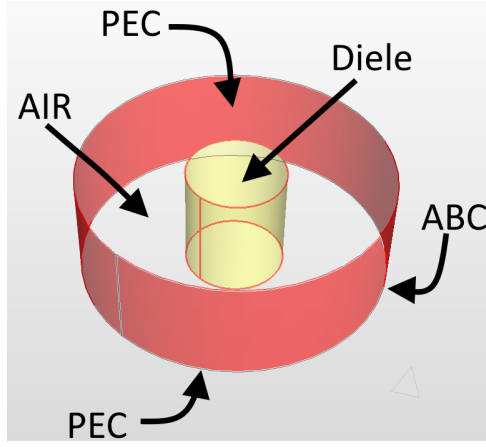


Figure 1: Dielectric cylinder

1 Test Structure

Dimensions of diele cylider: $h = 14.14mm$, $r = 6.35mm$.

- l – changes in z
- m – changes in ϕ

2 Reference values

| l | m | $f[\text{GHz}]$ |
|-----|-----|--|
| 1 | 1 | 5.927476642941969 - 0.000000000000956i |
| 1 | 0 | 7.157396553484392 + 0.000000000000309i |
| 2 | 1 | 8.419330369400139 + 0.000000000000140i |
| 1 | 0 | 8.577616207858835 - 0.000000000000184i |
| 1 | 2 | 9.000809159657440 - 0.000000000000327i |
| 1 | 1 | 9.817217985734700 + 0.000000000000013i |
| 1 | 1 | 2.654965223380517 + 2.649752044384797i |
| 1 | 2 | 6.489017180844433 + 6.979676810182653i |
| 1 | 1 | 9.647528194958669 + 0.980037277389168i |
| 2 | 0 | 9.732731779249484 - 0.000000000000180i |
| 1 | 1 | 9.813560793641980 + 0.097572618636548i |

3 Performance SLEPC-TOAR

- $r_{ABC} = 20mm$, NEV:6, time SLEPC: 69.6 [s] Problem size = 240678

| # | resonant frequencies | quality factor |
|----------|----------------------------------|----------------|
| 1 | 2.894460435444 + 1.308745048685i | 1.10 |
| 2 | 5.595008368761 + 0.518026111053i | 5.40 |
| 3 | 5.925311767432 + 0.005449391222i | 543.66 |
| 4 | 7.156727399819 + 0.008619860199i | 415.13 |
| 5 | 8.419961176814 + 0.000005813158i | 724215.76 |
| 6 | 8.586915595248 + 0.033292030429i | 128.96 |
| 7 | 8.710672485499 + 0.201741942883i | 21.58 |
| 8 | 8.710604115152 + 0.201728025239i | 21.58 |
| 9 | 9.006287288624 + 0.013433124733i | 335.22 |
| 10 | 9.006239875306 + 0.013432361488i | 335.24 |
| 11 | 9.734344459441 + 0.000018886588i | 257705.21 |
| 12 | 9.825137135315 + 0.012088732599i | 406.37 |
| 13 | 9.825031377266 + 0.012088248342i | 406.38 |

4 Performance CISS-MIM

- $r_{ABC} = 20mm$, NEV:6, time SLEPC: 69.6 [s] Problem size = 240678

| # | resonant frequencies | quality factor |
|----------|----------------------------------|----------------|
| 1 | 2.894460435444 + 1.308745048685i | 1.10 |