



## Current vs Magnetic Field-

|    | B (Gauss) | I (A) |
|----|-----------|-------|
| 0  | 650       | 0.0   |
| 1  | 1640      | 0.3   |
| 2  | 2320      | 0.6   |
| 3  | 3050      | 0.9   |
| 4  | 3820      | 1.2   |
| 5  | 4620      | 1.5   |
| 6  | 5370      | 1.8   |
| 7  | 6090      | 2.1   |
| 8  | 6780      | 2.4   |
| 9  | 7480      | 2.7   |
| 10 | 8020      | 3.0   |
| 11 | 8680      | 3.3   |
| 12 | 9150      | 3.6   |
| 13 | 9660      | 3.9   |

## Without Splitting-

|   | Ring | Radius (Pixel) | Radius (micro meter) | Radius^2 (micrometer^2) | Thickness t (mm) |
|---|------|----------------|----------------------|-------------------------|------------------|
| 0 | 1    | 67.0           | 187.6                | 0.00                    | NaN              |
| 1 | 2    | 161.5          | 452.2                | 169291.08               | 13.63            |
| 2 | 3    | 228.0          | 638.4                | 372360.80               | 12.39            |

Average Thickness = 13.01 mm

Average Thickness = 0.013 m

## With Splitting-

1.

$$I = 2A$$

$$B = 0.56 T$$

|   | Ring | Radius (Pixel) | Radius (micro meter) | Radius^2 (micrometer^2) |
|---|------|----------------|----------------------|-------------------------|
| 0 | 1 a  | 120            | 336.0                | 112896.00               |
| 1 | 1 b  | 184            | 515.2                | 265431.04               |
| 2 | 1 c  | 265            | 742.0                | 550564.00               |
| 3 | 2 a  | 316            | 884.8                | 782871.04               |
| 4 | 2 b  | 362            | 1013.6               | 1027384.96              |
| 5 | 2 c  | 411            | 1150.8               | 1324340.64              |
| 6 | 3 a  | 452            | 1265.6               | 1601743.36              |
| 7 | 3 b  | 483            | 1352.4               | 1828985.76              |
| 8 | 3 c  | 513            | 1436.4               | 2063244.96              |

|   | Rings       | a          | $\delta ab$ | b          | $\delta bc$ | c          |
|---|-------------|------------|-------------|------------|-------------|------------|
| 0 | 1           | 112896.00  | 152535.04   | 265431.04  | 285132.96   | 550564.00  |
| 1 | $\delta 12$ | 669975.04  | NaN         | 761953.92  | NaN         | 773776.64  |
| 2 | 2           | 782871.04  | 244513.92   | 1027384.96 | 296955.68   | 1324340.64 |
| 3 | $\delta 23$ | 818872.32  | NaN         | 801600.80  | NaN         | 738904.32  |
| 4 | 3           | 1601743.36 | 227242.4    | 1828985.76 | 234259.2    | 2063244.96 |

$$\text{Average } \delta ab = 208097.11 \text{ micrometer}^2$$

$$\text{Average } \delta bc = 272115.94 \text{ micrometer}^2$$

$$\text{Average } \delta ab = 2.08e-07 \text{ meter}^2$$

$$\text{Average } \delta bc = 2.72e-07 \text{ meter}^2$$

$$\text{Average } \delta 12 = 735235.19 \text{ micrometer}^2$$

$$\text{Average } \delta 23 = 786459.14 \text{ micrometer}^2$$

$$\text{Average } \delta 12 = 7.35e-07 \text{ meter}^2$$

$$\text{Average } \delta 23 = 7.86e-07 \text{ meter}^2$$

$$\text{Average } \Delta = 7.60e-07 \text{ meter}^2$$

$$\text{Average } Vab = 10.51 \text{ meter}^2$$

$$\text{Average } Vbc = 13.74 \text{ meter}^2$$

$$u0/hc = 43.01$$

2.

$I = 3\text{A}$

$B = 0.8\text{ T}$

|   | Ring | Radius (Pixel) | Radius (micro meter) | Radius^2 (micrometer^2) |
|---|------|----------------|----------------------|-------------------------|
| 0 | 1 a  | 129            | 361.2                | 130465.44               |
| 1 | 1 b  | 318            | 890.4                | 792812.16               |
| 2 | 1 c  | 451            | 1262.8               | 1594663.84              |
| 3 | 2 a  | 549            | 1537.2               | 2362983.84              |
| 4 | 2 b  | 635            | 1778.0               | 3161284.00              |
| 5 | 2 c  | 709            | 1985.2               | 3941019.04              |
| 6 | 3 a  | 765            | 2142.0               | 4588164.00              |
| 7 | 3 b  | 823            | 2304.4               | 5310259.36              |
| 8 | 3 c  | 882            | 2469.6               | 6098924.16              |

|   | Rings       | a          | $\delta ab$ | b          | $\delta bc$ | c          |
|---|-------------|------------|-------------|------------|-------------|------------|
| 0 | 1           | 130465.44  | 662346.72   | 792812.16  | 801851.68   | 1594663.84 |
| 1 | $\delta 12$ | 2232518.40 | NaN         | 2368471.84 | NaN         | 2346355.20 |
| 2 | 2           | 2362983.84 | 798300.16   | 3161284.00 | 779735.04   | 3941019.04 |
| 3 | $\delta 23$ | 2225180.16 | NaN         | 2148975.36 | NaN         | 2157905.12 |
| 4 | 3           | 4588164.00 | 722095.36   | 5310259.36 | 788664.8    | 6098924.16 |

Average  $\delta ab = 727580.74\text{ micrometer}^2$

Average  $\delta bc = 790083.83\text{ micrometer}^2$

Average  $\delta ab = 7.27\text{e-}07\text{ meter}^2$

Average  $\delta bc = 7.90\text{e-}07\text{ meter}^2$

Average  $\delta 12 = 2315781.81\text{ micrometer}^2$

Average  $\delta 23 = 2177353.54\text{ micrometer}^2$

Average  $\delta 12 = 2.31\text{e-}06\text{ meter}^2$

Average  $\delta 23 = 2.17\text{e-}06\text{ meter}^2$

Average  $\Delta = 2.24\text{e-}06\text{ meter}^2$

Average  $Vab = 12.44\text{ meter}^2$

Average  $Vbc = 13.51\text{ meter}^2$

$u_0/hc = 32.59$

3.

$$I = 3.76 \text{ A}$$

$$B = 0.97 \text{ T}$$

|   | Ring | Radius (Pixel) | Radius (micro meter) | Radius^2 (micrometer^2) |
|---|------|----------------|----------------------|-------------------------|
| 0 | 1 a  | 136            | 380.8                | 145008.64               |
| 1 | 1 b  | 237            | 663.6                | 440364.96               |
| 2 | 1 c  | 323            | 904.4                | 817939.36               |
| 3 | 2 a  | 395            | 1106.0               | 1223236.00              |
| 4 | 2 b  | 452            | 1265.6               | 1601743.36              |
| 5 | 2 c  | 505            | 1414.0               | 1999396.00              |
| 6 | 3 a  | 569            | 1593.2               | 2538286.24              |
| 7 | 3 b  | 595            | 1666.0               | 2775556.00              |
| 8 | 3 c  | 636            | 1780.8               | 3171248.64              |

|   | Rings       | a          | $\delta ab$ | b          | $\delta bc$ | c          |
|---|-------------|------------|-------------|------------|-------------|------------|
| 0 | 1           | 145008.64  | 295356.32   | 440364.96  | 377574.4    | 817939.36  |
| 1 | $\delta 12$ | 1078227.36 | NaN         | 1161378.40 | NaN         | 1181456.64 |
| 2 | 2           | 1223236.00 | 378507.36   | 1601743.36 | 397652.64   | 1999396.00 |
| 3 | $\delta 23$ | 1315050.24 | NaN         | 1173812.64 | NaN         | 1171852.64 |
| 4 | 3           | 2538286.24 | 237269.76   | 2775556.00 | 395692.64   | 3171248.64 |

$$\text{Average } \delta ab = 303711.14 \text{ micrometer}^2$$

$$\text{Average } \delta bc = 390306.56 \text{ micrometer}^2$$

$$\text{Average } \delta ab = 3.03e-07 \text{ meter}^2$$

$$\text{Average } \delta bc = 3.90e-07 \text{ meter}^2$$

$$\text{Average } \delta 12 = 1140354.13 \text{ micrometer}^2$$

$$\text{Average } \delta 23 = 1220238.50 \text{ micrometer}^2$$

$$\text{Average } \delta 12 = 1.14e-06 \text{ meter}^2$$

$$\text{Average } \delta 23 = 1.2202385066666663e-06 \text{ meter}^2$$

$$\text{Average } \Delta = 1.18e-06 \text{ meter}^2$$

$$\text{Average } Vab = 9.88 \text{ meter}^2$$

$$\text{Average } Vbc = 12.70 \text{ meter}^2$$

$$u_0/hc = 23.22S$$