解题过程

程闽

2023 年 6 月 9 日

每个盘面共有

$$tot = 2^9 \times (160 + 200 + 240 + 280)\mathrm{B}$$

故总容量大小为

$$T = tot \times 16 = 7208960\mathrm{B}$$

在时间 1 m sec 之内磁盘会旋转

$$rot = \frac{7200 \times 360 \div 60}{1000}^\circ = 43.2^\circ$$

各环带每个扇区分别需要旋转的度数为:

$$rot1 = \frac{360}{160}^\circ = 2.25^\circ$$

$$rot2 = \frac{360}{200}^\circ = 1.8^\circ$$

$$rot3 = \frac{360}{240}^\circ = 1.5^\circ$$

$$rot4 = \frac{360}{280}^\circ = 1.286^\circ$$

则最优磁盘斜进分别为:

$$skew1 = \frac{rot}{rot1} = 19.2$$

$$skew2 = \frac{rot}{rot2} = 24$$

$$skew3 = \frac{rot}{rot3} = 28.8$$

$$skew4 = \frac{rot}{rot4} = 33.6$$

最大数据率为:

$$rate = (7200 \div 60) \times 280 \times 2^9\mathrm{B/sec} = 17\,203\,200\,\mathrm{B/sec}$$