«Features of the distribution of the magnetic field in the vicinity of the erythrocyte membrane»

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Problem statement

- The problem of generating magnetic fields in a living organism.
- Task 1: Generation of a magnetic field by charges on an erythrocyte membrane in a narrow capillary.
- Task 2: Estimation of the magnitude of the magnetic field and its distribution in the vicinity of the erythrocyte membrane.
Solution methods

• A mathematical model is developed, programs are written, and computer calculations are made.

• Examples of calculations on a computer (The distribution of the magnetic field strength $H$ at a distance 8 μm and 98 μm from the red blood cell):
Conclusions

Results, implementation

• The calculations showed that the magnetic intensity at a distance of 1 μm from the red blood cell reaches 0.001 A/m.

• The distribution of the magnetic field in the vicinity of the red blood cell shows that the strength in front of the red blood cell and behind it is greater than from the sides.

• The differences in the distribution of the magnetic field strength are significant at small distances from the red blood cell (~ 1 μm).

• The differences in the distribution of strength at large distances (~ 100 μm) are smoothed.

• This allows us to conclude that at large distances from the red blood cell, the magnetic field of the red blood cell is similar to the magnetic field of a dipole.
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