Answer on Question #75076 Physics / Electromagnetism

The magnetic field midway between two parallel current carrying wires, carrying current I and 2I is B. If the current in the wire with current I is switch off, the magnetic field will become (1) B/3 (2) 2B (3)B/2 (4) B/4.

Solution:

At the initial state, magnetic field midway between two parallel current

$$B = \frac{2\mu_0 I}{2\pi d/2} - \frac{\mu_0 I}{2\pi d/2} = \frac{\mu_0 I}{2\pi d/2}$$

If the current in the wire with current I is switch off, the magnetic field will be

$$B' = \frac{2\mu_0 I}{2\pi d/2} = 2B$$

Answer: (2) 2B