

## Unit 22 – Session 1

### Activity 22.2

Instead of talking about electrical interactions in terms of forces between charges (or masses), we are going to talk about it in terms of potential and potential energy.

There are a couple of fundamental ideas that will help us.

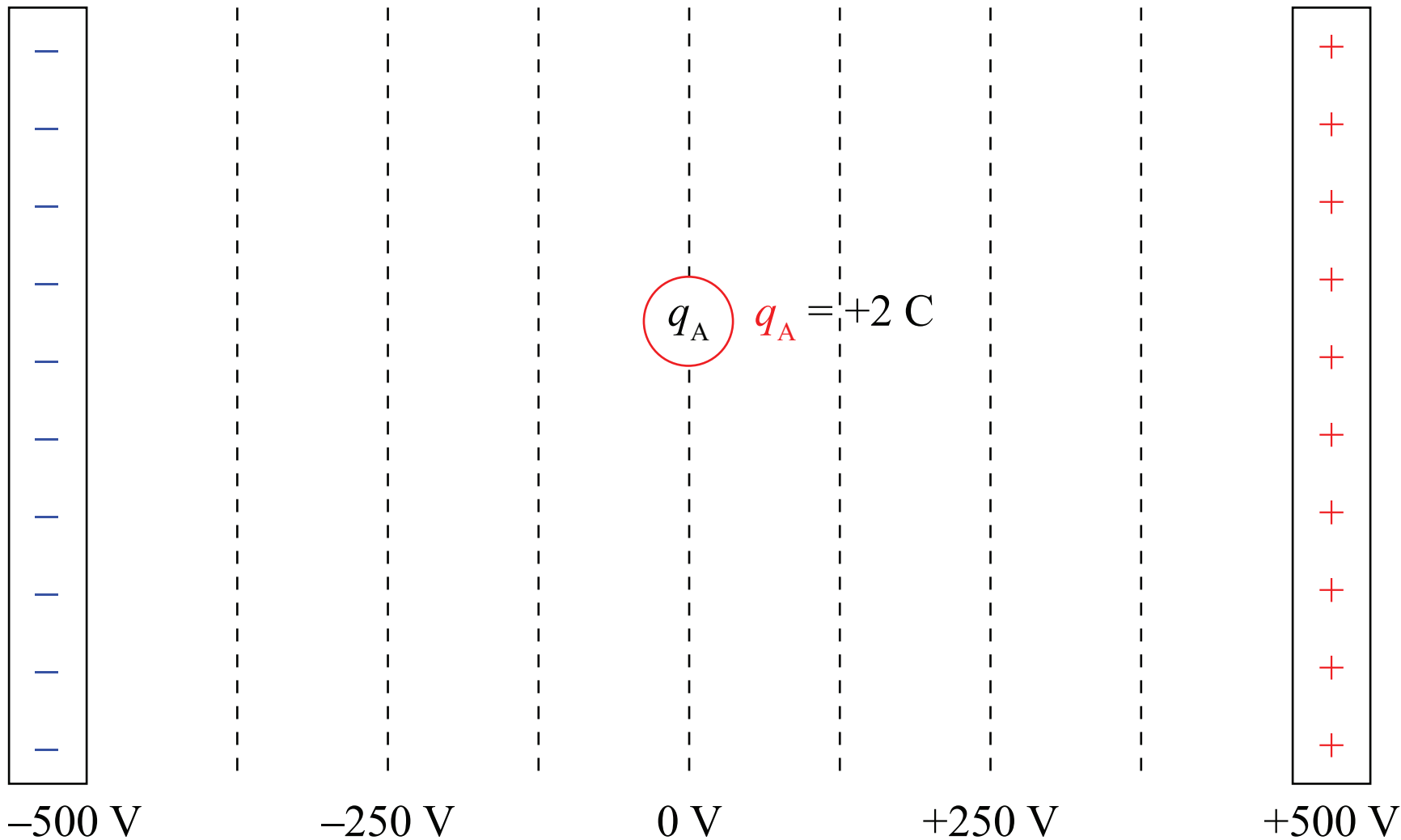
- **If allowed to**, all systems will move in such a way as to **decrease** the potential *energy* of the system.
  - (Not “*try to*”, not “*want to*”, but if allowed, it **will** move to decrease  $U$ )
- One or more objects in the system may be what moves. For example, for a ball/Earth system, the ball is what is moving (if allowed to), not the Earth.
- The path the object(s) take will depend on how they are allowed to move and how they are already moving, but the path will be such that it minimizes the amount of time. For example, a ball dropped from rest will go straight down to the floor, not down and left to the floor – both paths will decrease  $U$  by the same amount, but the straight down path takes less time.

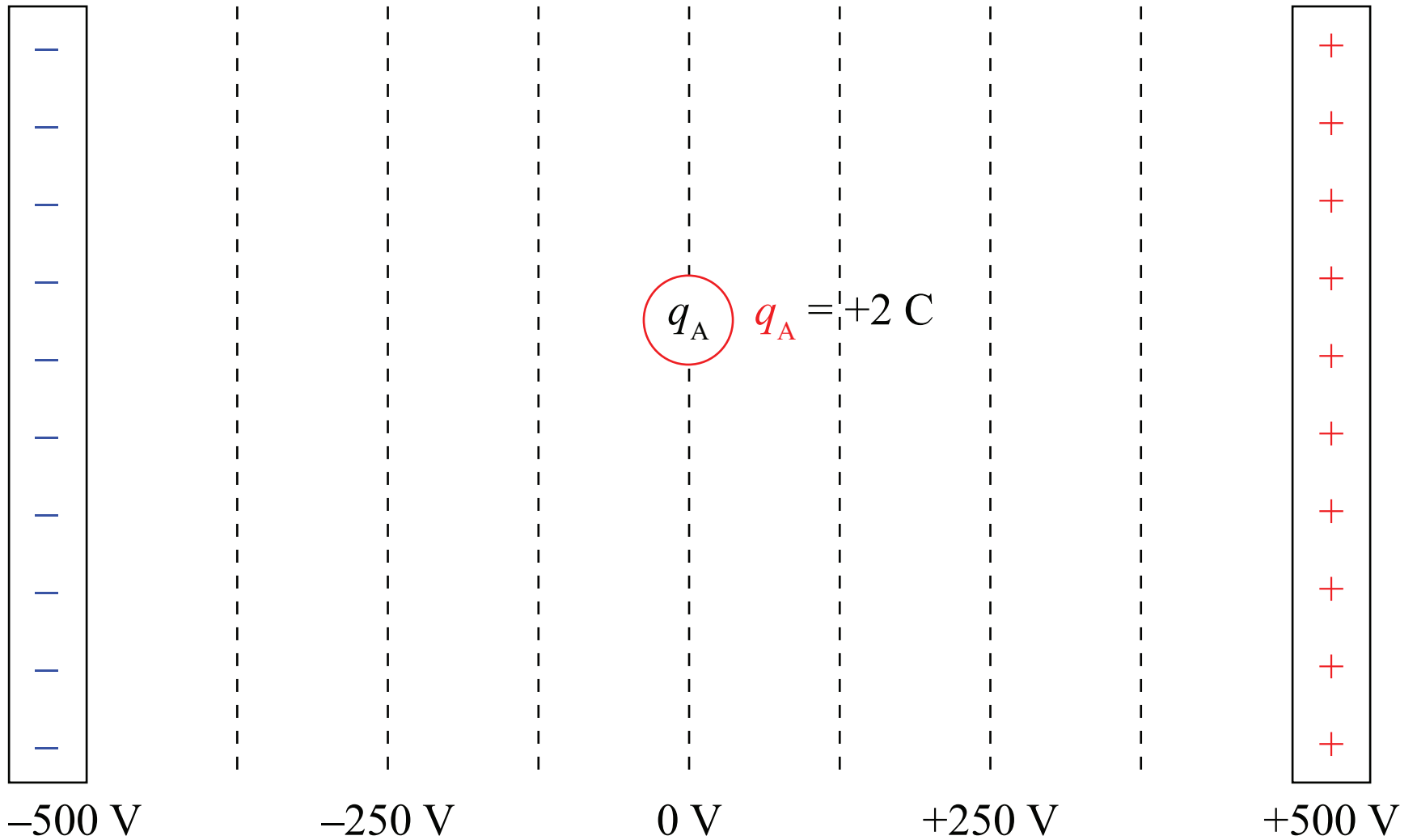


-500 V

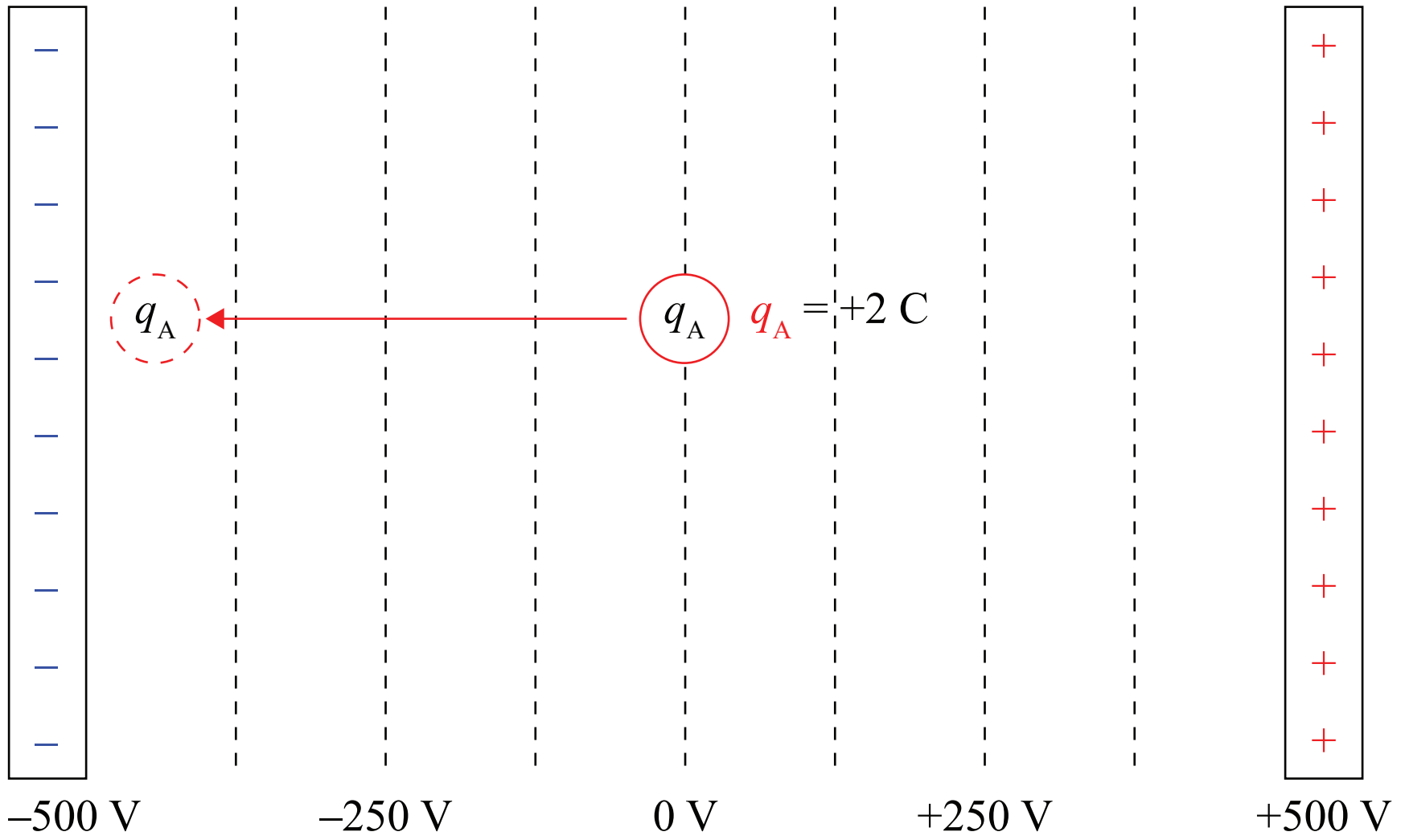


+500 V



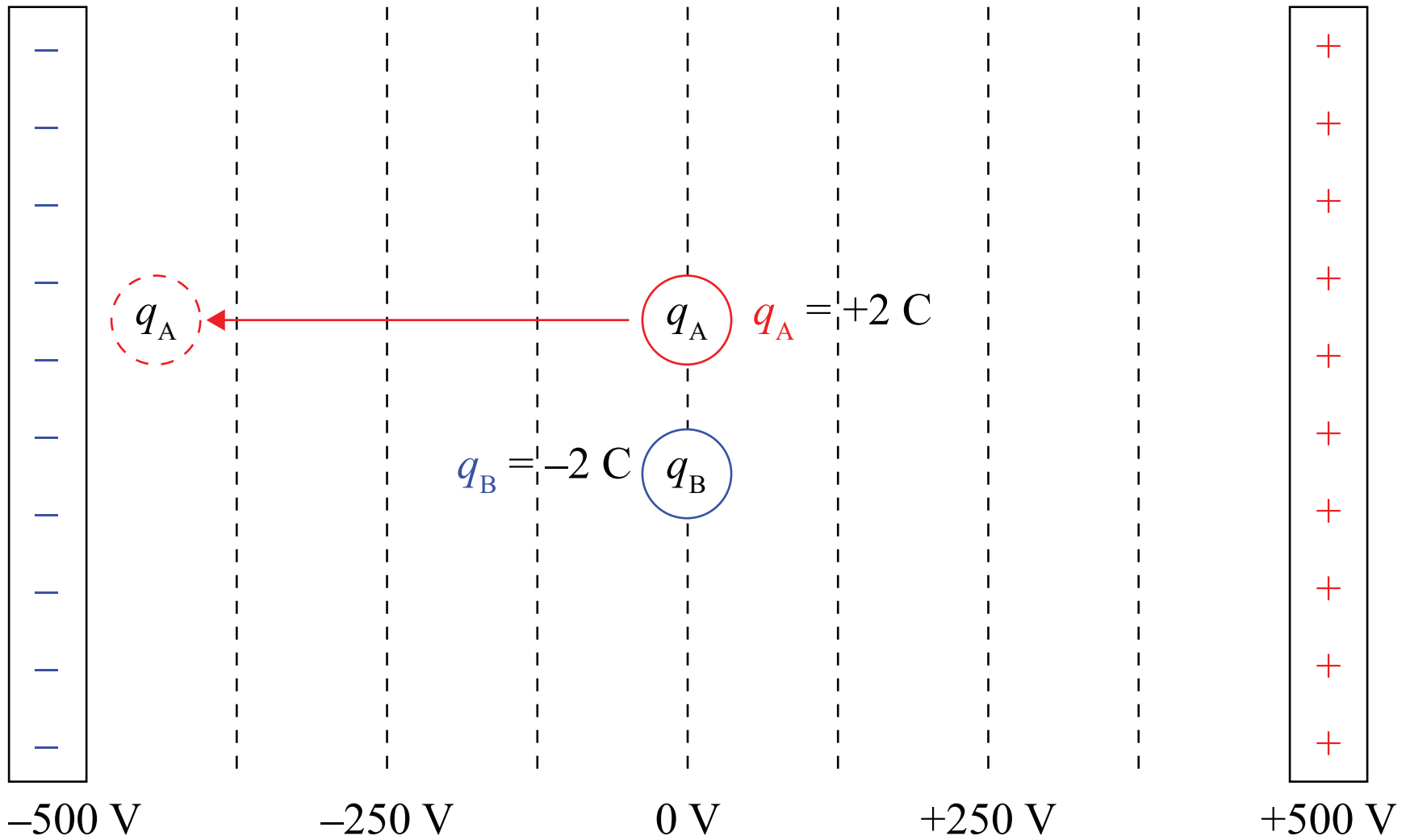


$$U_{A,1} = q_A V = 0\text{ J}$$



$$U_{A,2} = q_A V = -875\text{ J}$$

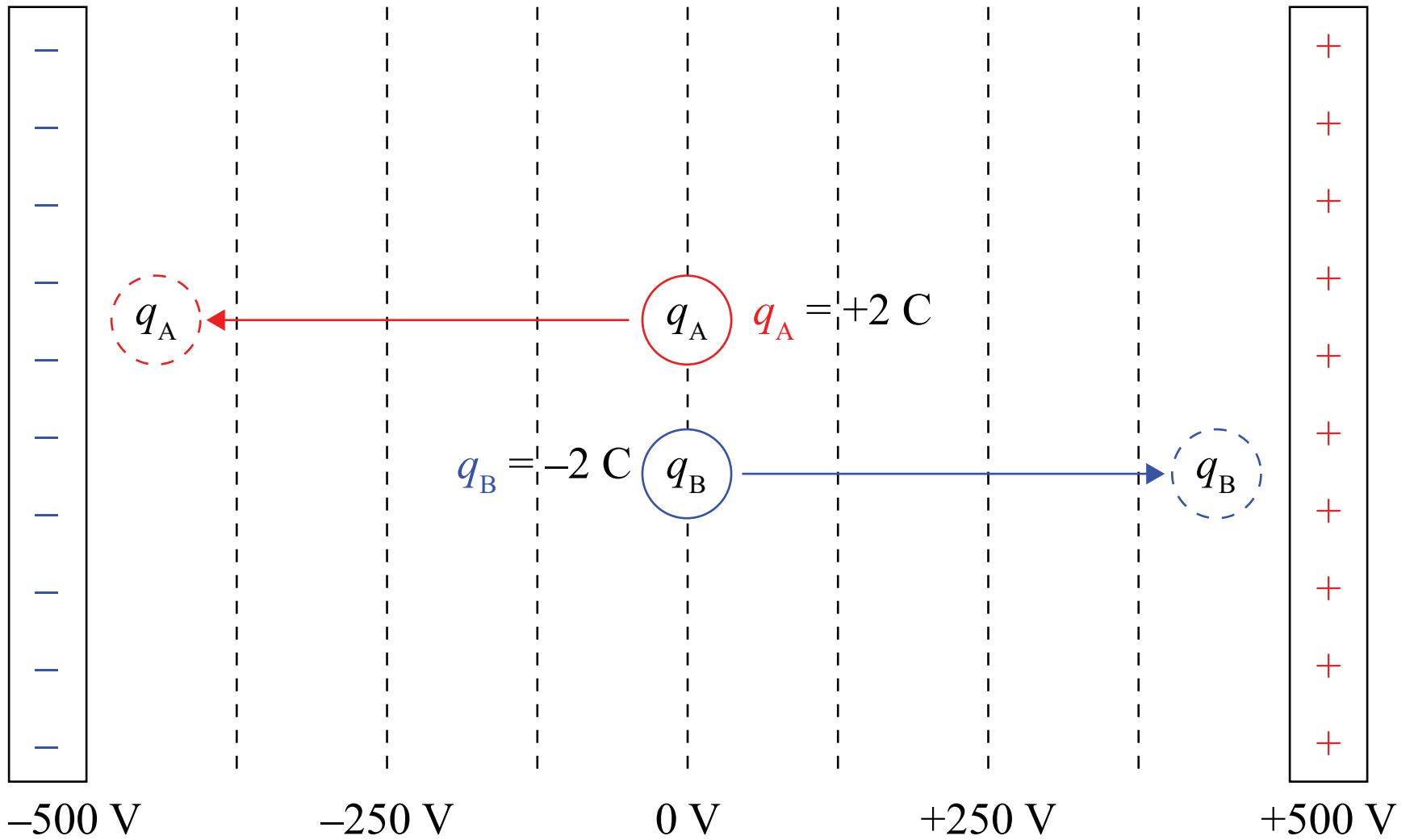
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$$U_{A,1} = q_A V = 0\text{ J}$$

$$U_{B,1} = q_B V = 0\text{ J}$$



$$U_{A,2} = q_A V = -875\text{ J}$$

$$U_{A,1} = q_A V = 0\text{ J}$$

$$U_{B,1} = q_B V = 0\text{ J}$$

$$U_{B,2} = q_B V = -875\text{ J}$$