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Rotation Radius of Spiral Arc Affected by Rigidity Decrement in Axial Magnetic Field YUTO NAITO, YOSHIFUMI MAEDA, TORU IWAO, Tokyo city university — HVDC (High Voltage Direct Current) used in the case of electric transmission of renewable energy. However, it is difficult to cut off current in HVDC. The method of applying axial magnetic field to the arc is considered. Axial magnetic field is applied to same direction with arc. The arc makes the circular motion in axial magnetic field. This condition arc is called spiral arc. The length of spiral arc is longer than that of steady when the arc becomes spiral, the voltage increases. Thus, it is easy to interrupt the current. The arc length and voltage increase because of rigidity decrement affected by current decrement. Therefore, the axial magnetic field is useful to DC circuit breaker. In this paper, the rotation radius of spiral arc affected by arc rigidity in axial magnetic field is elucidated. The arc rigidity with rotation radius of spiral arc is calculated. As a result, when the appropriate electrode distance and magnetic flux intensity can be chosen, the arc length increases and the arc is interrupted.

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