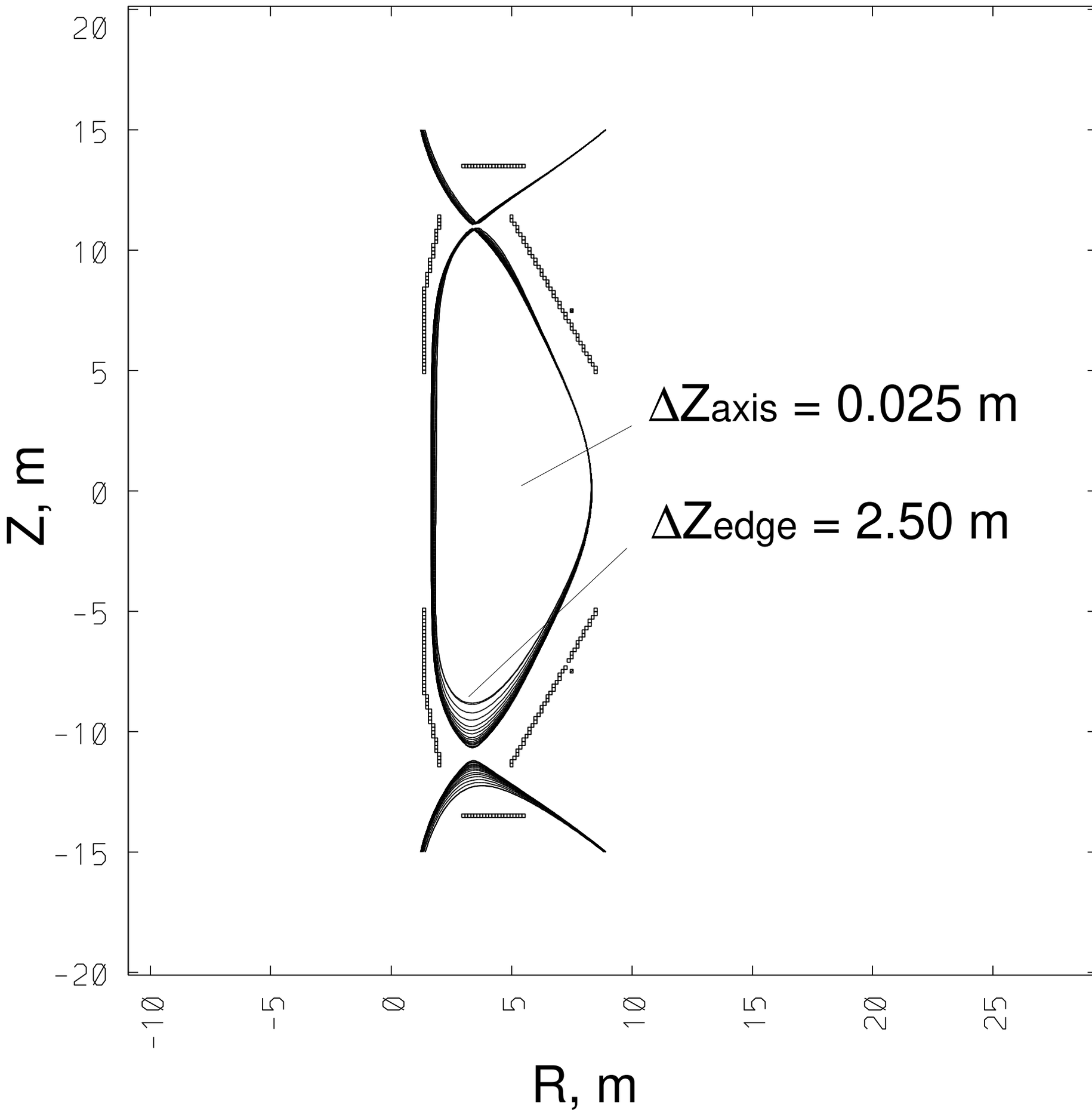plasma boundaries during vertical drift