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**Distribution of Rb atoms on the antirelaxation RbH coating.** YI ZHANG, ZHIGUO WANG, TAO XIA, Interdisciplinary Center of Quantum Information, National University of Defense Technology — We observe the extension of relaxation time of  $^{131}\text{Xe}$  with RbH coating, and compare the different depositions of Rb atoms on the inner surface of the vapor cell with and without RbH coating respectively to research the mechanism of coating prolongation. From the  $5 \times 5 \text{ um}^2$  images of microscopy, we find that on the bare glass surface the Rb atoms form large random separated islands, and to the contrary they deposit as many regular longitudinal stripe of small islands on the RbH coating. We attribute these different distributions to the different molecular interactions between RbH coating and bare glass to Rb atom and build a simple rational physical model to explain this phenomenon. On the one hand, the small islands, or in other words, the relative uniform distribution on RbH coating may result from the relative stronger interaction of Rb to RbH than to the bare glass. On the other hand, the regular longitudinal stripe may stem from the grain boundaries which is related to the macroscopic shape of the vapor cell. And this longitudinal distribution can generate cylindrically electric gradient as used in some theoretically references before.

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