

## The boundedness of commutators on locally compact Vilenkin groups

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**Abstract.** Let  $G$  be a locally compact Vilenkin group. In this paper, the authors investigate the boundedness of commutators of singular integral operator on Triebel-Lizorkin spaces on  $G$ . Furthermore, the boundedness on the Herz-type Triebel-Lizorkin spaces are also studied.

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### 1. Introduction

The commutators have been studied by many authors for a long time. A well known result which is discovered by Coifman, Rocherg and Weiss ([3], [7], [12]) is that the commutators  $[b, T]$  of singular integral operators are bounded on some  $L^p(\mathbb{R}^n)$  ( $1 < p < \infty$ ) if and only if  $b \in BMO$ , where  $[b, T]$  is defined by  $[b, T]f(x) = b(x)Tf(x) - T(bf)(x)$ . Later, Janson in [6] gave that  $[b, T]$  is bounded from  $L^p(\mathbb{R}^n)$  to  $L^q(\mathbb{R}^n)$  when  $1 < p < q < \infty$  if and only if  $b \in \text{Lip}_\beta$  and  $\beta = n \left( \frac{1}{p} - \frac{1}{q} \right)$ . In 1995, M. Paluszycński

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