1135-47-305 **Xiao-Xiong Gan*** (xiao-xiong.gan@morgan.edu), Department of Mathematics, Morgan State University, 1700 E. Cold Spring Lane, Baltimore, MD 21251. *Canonical operator on the space of formal series.*

Let ξ_I be the characteristic function of the interval $I \subset \mathbb{R}$ and we define

$$\mathfrak{M}_0 = \left\{ \sum_{n\in\mathbb{Z}} a_n \xi_{(n,n+1]} : \ (a_n)_{n\in\mathbb{Z}} \subset \mathbb{C} \right\},$$

the subset of extended $\mathbb{C}$-valued step functions on $\mathbb{R}$. Let $\mathbb{L}$ be the space of formal Laurent series over $\mathbb{C}$, we define the mapping $A : \mathbb{L} \longrightarrow \mathfrak{M}_0$ by

$$A(f) = \sum_{n\in\mathbb{Z}} a_n \xi_{(n,n+1]} \quad \text{for } f(z) = \sum_{n\in\mathbb{Z}} a_n z^n \ \in \mathbb{L}.$$

The mapping A is said to be the canonical mapping.

This canonical mapping provides a simpler and intereting approach for us to investigate the rather complicated multiplication, or Cauchy product, for formal Laurent series by connecting the Cauchy product in $\mathbb{L}$ to the convolution in $\mathfrak{M}_0$. Some metric and topology of $\mathbb{L}$ is also introduced under which the canonical mapping A is isometric.

References

[1] CAN, X. -X., *Selected Topics of Formal Analysis*, Lecture Notes of Nonlinear Analysis, Juliusz Achauder Center for Nonlinear Studies at Nicolaus Copernicus University, Poland, 2017.

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