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A fixed point approach to the stability of a septic functional equation in fuzzy quasi- β -normed spaces. (English) [Zbl 1358.39014](#)

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Suppose that X is a real linear space, T is a continuous t -norm, $\beta \in (0, 1]$ is a fixed real number and N is a fuzzy set on $X \times \mathbb{R}$ satisfying (i) $N(x, t) = 0$ for each $t \leq 0$, (ii) $x = 0$ if and only if $N(x, t) = 1$ for each $t > 0$, (iii) $N(cx, t) = N(x, \frac{t}{|c|^\beta})$ if $c \neq 0$, (iv) $N(x + y, K(s + t)) \leq N(x, s)TN(y, t)$ for some constant $K \leq 1$, (v) $\lim_{t \rightarrow \infty} N(x, t) = 1$ for each $x, y \in X$ and $s, t \in \mathbb{R}$. Then (X, N, T) is said to be a fuzzy quasi- β -normed space. In this paper, the authors investigate the stability of the functional equation $f(x + 4y) - 7f(x + 3y) + 21f(x + 2y) - 35f(x + y) - 21f(x - y) + 7f(x - 2y) - f(x - 37) + 35f(x) = 5040f(y)$ in a fuzzy quasi- β -normed space.

Reviewer: [Maryam Amyari \(Mashhad\)](#)

MSC:

- [39B82](#) Stability, separation, extension, and related topics for functional equations
- [39B52](#) Functional equations for functions with more general domains and/or ranges
- [46S40](#) Fuzzy functional analysis

Keywords:

[stability](#); [fixed point](#); [fuzzy quasi- \$\beta\$ -normed space](#); [difference operator](#); [septic functional equation](#)

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