where $N \geq 1$.

3. By Theorem 11 of [1]

$$(14)\qquad \begin{cases} N \in (a) \rightleftarrows 0 < \left\{\dfrac{N}{\alpha^2}\right\} < \tfrac{1}{2}\,, \\ N \in (b) \rightleftarrows \dfrac{1}{\alpha} < \left\{\dfrac{N}{\alpha^2}\right\} < 1\,, \end{cases}$$

where $\{x\}$ denotes the fractional part of x. The possibility $\{N/\alpha^2\} = 1/\alpha$ never occurs.

We should like to point out that (14) can be replaced by the following slightly simpler criterion.

$$(15)\qquad \begin{cases} N \in (a) \rightleftarrows \{\alpha N\} > \dfrac{1}{\alpha^2} \\ N \in (b) \rightleftarrows \{\alpha N\} < \dfrac{1}{\alpha^2} \end{cases} .$$

As above, $\{\alpha N\} = 1/\alpha^2$ is impossible.

To see that (14) and (15) are equivalent, it suffices to observe that

$$\left\{\frac{N}{\alpha^2}\right\} = \{(2 - \alpha)N\} = 1 - \{\alpha N\} .$$

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