Thomas Stoll
On Hofstadter's Married Functions,
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Abstract

In this note we show that Hofstadter's married functions generated by the intertwined system of recurrences $a(0) = 1$, $b(0) = 0$, $b(n) = n - a(b(n-1))$, $a(n) = n - b(a(n-1))$ has the solutions $a(n) = \lfloor (n+1)\phi^{-1} \rfloor + \varepsilon_1(n)$ and $b(n) = \lfloor (n+1)\phi^{-1} \rfloor - \varepsilon_2(n)$, where ϕ is the golden ratio and $\varepsilon_1, \varepsilon_2$ are indicator functions of Fibonacci numbers diminished by 1.