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Title: On a variant of the Brocard–Ramanujan equation and an application

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In this paper, we study the variant of the Brocard–Ramanujan diophantine equation $m! + 1 = u^2$, where u is a member of a sequence of positive integers. Under some technical conditions on the sequence, we prove that this equation has at most finitely many solutions in positive integers m and u. As an application, we completely solve this equation when u is a Tripell number. The Tripell numbers are defined by the recurrence relation $T_n = 2T_{n-1} + T_{n-2} + T_{n-3}$ for $n \geq 3$, with $T_0 = 0$, $T_1 = 1$ and $T_2 = 2$ as initial conditions.

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