We would like to sum $\frac{\vec{11}}{2} + \frac{\vec{11}}{2}$ (2 neutrons with $J = \frac{11}{2}$)

Let's start from a simple case $\vec{J}_1 = \vec{J}_2 = 2$

$\vec{J}_1 + \vec{J}_2 = \vec{2} + \vec{2} = 4, 3, 2, 1, 0$, in principle. We have to consider the 3rd component of the momentum $J$

$$M_J = M_{J_1} + M_{J_2}$$

So if we do a simple scheme for the sum of such component we have

| $M_{J_2}$ \ $M_{J_1}$ | 2 | 1 | 0 | -1 | -2 |
|---|---|---|---|---|---|
| 2 | | | | | |
| 1 | | | | | |
| 0 | | | | | |
| -1 | | | | | |
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|---|---|---|---|---|---|
| 2 | • | × | × | × | × |
| 1 | • | • | × | × | × |
| 0 | • | • | • | × | × |
| -1 | • | • | • | • | × |
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(1) We will see which states are possible •

And which are a repitition ×

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| 2 | • 4 | × | × | × | × |
| 1 | • 3 | • | × | × | × |
| 0 | • | • | • 0 | × | × |
| -1 | • | • | • -1 | • -2 | × |
| -2 | • 0 | • 1 | • -2 | • -3 | • -4 |

$\Rightarrow J=0$

$\Rightarrow J=2$

$\Rightarrow J=4$

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|---|---|---|---|---|---|---|
| 2 | • 4 | × | × | × | × | |
| 1 | • 3 | • 2 | × | × | × | |
| 0 | • 2 | • 1 | $\boxed{\bullet\ 0}$ | × | × | → J=0 |
| −1 | • 1 | • 0 | • −1 | • −2 | × | → J=2 |
| −2 | • 0 | • −1 | • −2 | • −3 | • −4 | → J=4 |

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At the end we have only $J = 0, 2, 4$ which are allowed.

Odd $J$ are not allowed.

A similar conclusion can be drawn also for $\vec{\frac{11}{2}} + \vec{\frac{11}{2}}$: only

$J = 10, 8, 6, 4, 2, 0$ are allowed.