Difficulty: 4/4 Interest: 4/4

Consider a peaceable queens problem in an $n \times n \times n$ chess "cube", where a queen can move in any diagonal direction.

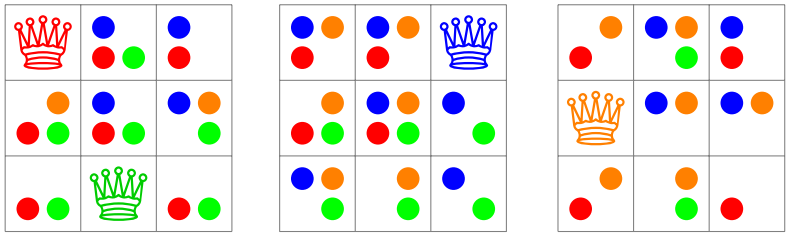

Figure 1: At least four hyper-queens can be placed peaceably on a $3 \times 3 \times 3$ board.

Question. What is the greatest number of queens that can be placed on an $n \times n \times n$ board?

Related.

1. If n^{k-1} queens can be placed on a $\underbrace{n \times n \times \ldots \times n}_{k}$ board for sufficently large n, how large must n be?

References.

`https://math.stackexchange.com/q/2232287/121988`