$$\sum_{i=1}^{n}\sum_{j=1}^{n}\frac{\frac{i^2}{n^2}+\frac{j^2}{n^2}}{n^2}=\frac{1}{n^4}\sum_{i=1}^{n}\sum_{j=1}^{n}(i^2+j^2)$$

$$=\frac{1}{n^4}\sum_{i=1}^{n}\left(\sum_{j=1}^{n}i^2\ +\sum_{j=1}^{n}j^2\right)$$

$$=\frac{1}{n^4}\sum_{i=1}^{n}\left(n\,i^2+\sum_{j=1}^{n}j^2\right)$$