# The Verlinde Formula

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The Verline Formula[1] is just some term I see in papers to make people sound smart. What are these terms anyway?

- $G$ simple and simply connected compact Lie group
- $M$ moduli space of semi-stable $G^{\mathbb{C}}$ bundles on $\Sigma$
- $\Sigma$ smooth algebraic curve over complex numbers

I am now totally lost.

[1] I have seen Herman Verline or possibly Erik Verline at some point in my life.

OK. I used to like this field a lot and somewhere I lost interest. The starting point is **orthogonality of characters**. If $\psi, \chi$ are characters of a group then:

$$\frac{1}{|G|}\sum_{g\in\mathbb{G}}\chi(g)\psi(g) = \begin{cases} 1 \text{ if } \chi = \psi \\ 0 \text{ if } \chi \neq \psi \end{cases}$$

Nobody was interested when I learned this formula. Perhap's it's best I leave this topic.

# References

(1) Jorgen Ellegaard Andersen, Sergei Gukov, Du Pei **The Verlinde formula for Higgs bundles** arXiv:1608.01761