

1107-01-364

Lydia Patton* (critique@vt.edu), Department of Philosophy, 220 Stanger St., Blacksburg, VA 24061-0126. "*Geometrical figures in physical proofs*".

In the nineteenth century, there was broad use of geometrical figures to model physical phenomena, including Lissajous curves in acoustics and rotating cylinders in Maxwell's electrodynamics. The increasingly algebraic treatment of geometry rendered such models superfluous within geometry itself: geometrical intuition was no longer a source of mathematically rigorous proof. The role of geometrical models in physics is more complex. For instance, a spatial manifold is derived geometrically, but is part of physical explanation. This paper will consider the question of applications of geometrical figures and models in physical proofs, and will propose an account of how such figures function in explanation, in physical proof, and in the building of theories. (Received January 19, 2015)