**ABSTRACT**

*Damage caused by wear and tear can reduce the lifetime of the wheels and rails on the train. Analysis of wear from this friction must be specified ranging from physical interaction between wheel and rail for two components of its operation. Train velocity is directly proportional to axle load a moving train on the tracks, this event will affect the force of the contact occurred and should be thoroughly investigated.*

*Analytical methods traditionally to investigate the contact between wheel and rail has been developed using Hertz's theorem but the problem contact that could be solved there are still very limited. Numerical method based on finite element method can be an alternative to obtain a broader analysis solutions. This method has been developed in several decades.*

*Contact the wheel and rail by inserting a sliding variable can be solved with numerical, in the analysis of contact force and wear volume can be analyzed from the function of the velocity of the carriage.*

*The results of numerical analysis performed virtually on a train wheel diameter of 780 mm (material STY80W-1), rail type A75 (DIN536), the velocity of the train 120 km / h (33.3 m / s), the weight of the train 82 tons, the load supported by each wheel is 67.035 kN, the maximum contact pressure obtained at 721.83 MPa, and the wear volume of 3.2 x10-5 μm3.*