

**AimSizer/LNO.0039**

**Theoretical Analysis of Movement of One Single Ball in Ball Mills**

**Abstract:** Considering the lack of deep understanding on the motion mechanism of the single grinding medium through various traditional studies, two cases of the charge motions of single ball medium with and without rotary were discussed respectively by the theoretical method. The effects of relative slip of ball and shell, roll of ball and friction on ball motion were researched. It was found that the height of the ball when it was climbing along the shell was influenced by the rotational speed of the ball mill and the friction coefficient when the ball and the shell contacted each other. Moreover, a comparison was done to the movement in both cases and it was found that the charge motion was also influenced by the autorotation of the ball.

**Key words:** ball mill; ball media; charge motion; laser particle size analyzer; particle size analyzer; aimsizer; as-2011 micron laser particle size analyzer; as-2012 submicron laser particle size analyzer

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