

ABSTRACT

An apparatus includes an X-ray generating source adapted to radiate X-rays toward a measuring object; a first detecting element adapted to detect intensity of diffracted X-rays of the measuring object at a first detecting position; a second detecting element adapted to detect intensity of the diffracted X-rays of the measuring object at a second detecting position different from the first detecting position; a moving mechanism adapted to move each of the first detecting element and the second detecting element along a straight line extending in a direction orthogonal to a direction of incidence of the X-rays; a movement control unit adapted to control respective detecting positions of the first detecting element and the second detecting element by driving the moving mechanism; and a stress calculation unit adapted to calculate residual stress of the measuring object based on intensity peaks of the diffracted X-rays detected, respectively, by the first detecting element and the second detecting element each moved by the moving mechanism.