This thesis deals with the study of an non-gravitational effect called the YORP effect which affects the rotational state of irregularly shaped asteroids. In its first part, there is discussed the very physical nature of this phenomenon and further it demonstrates an effect similar to the YORP: the Yarkovsky effect. Second part analyzes several outstanding numerical models, which describe the YORP effect. It focuses on some aspects that no other models took in account and it also points out what approximations these models make. We have used two different numerical models on an asteroid shape of our own and we present it in the last part of this bachelor thesis. At the end of this paper, we compare our outputs with the findings of appropriate models. Our results agree with the cited articles in the majority of cases. We tried to analyze how the YORP effect depends on the changing conductivity of the asteroids and we also found out that better resolution of shapes of asteroids leads to the convergence of the values of the YORP effect.