

We consider the problem of finding, from the final data  $u(x, T) = \varphi(x)$ , the temperature function  $u(x, t)$ ,  $x \in (0, \pi)$ ,  $t \in [0, T]$  satisfies the following nonlinear system

$$\begin{aligned}u_t - u_{xx} &= f(x, t, u(x, t)), & (x, t) &\in (0, \pi) \times (0, T) \\u(0, t) &= u(\pi, t) = 0, & t &\in (0, T).\end{aligned}$$

The nonlinear problem is severely ill-posed. We shall improve the quasi-boundary value method to regularize the problem and to get some error estimates. The approximation solution is calculated by the contraction principle. A numerical experiment is given.