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A nonlinear mathematical model of the corneal shape. (English) Zbl 1239.34004
Nonlinear Anal., Real World Appl. 13, No. 3, 1498-1505 (2012).

Summary: We consider a nonlinear two-point boundary value problem which is derived as a description of corneal shape. We prove some basic results concerning existence, uniqueness and estimates. We suggest some approximate solution fitting over fifteen thousands real corneal data points with an error of order of 1%.

MSC:

[34A05](#) Explicit solutions, first integrals of ordinary differential equations

[37N25](#) Dynamical systems in biology

[92C05](#) Biophysics

Cited in **2** Reviews
Cited in **15** Documents

Keywords:

corneal shape; mathematical model; nonlinear differential equation; boundary value problem

Full Text: [DOI](#)

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