

## Analytical model of a circular membrane with damage in the form of scratches

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*Abstract:* The paper presents the analytical model of a circular membrane with damage located in the middle of the membrane in shape of scratches. The obtained model is based on a partial differential equation, describing vibration of the torus filled in the middle. The obtained differential equation was analytically calculated using existing tools, eg substitution of Bessel. On the basis of the original model, the natural frequencies of the object were determined and, as a result, the damage assessment of the circular membrane was determined.

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