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## bifurcation problem with symmetry group

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Let  $\Gamma$  be a Lie group acting on a vector space  $V$  and let the system of ordinary differential equations

$$\dot{\mathbf{x}} + g(\mathbf{x}, \lambda) = 0$$

where  $g: \mathbb{R}^n \times \mathbb{R} \rightarrow \mathbb{R}^n$  is smooth. Then  $g$  is called a *bifurcation problem with symmetry group  $\Gamma$*  if  $g \in \vec{\mathcal{E}}_{x,\lambda}(\Gamma)$  (where  $\vec{\mathcal{E}}(\Gamma)$  is the space of  $\Gamma$ -equivariant germs, at the origin, of  $C^\infty$  mappings of  $V$  into  $V$ ) satisfying

$$g(0, 0) = 0$$

and

$$(dg)_{0,0} = 0$$

where  $(dg)_{0,0}$  denotes the Jacobian Matrix evaluated at  $(0, 0)$ . [?]

## References

[GSS] Golubitsky, Martin. Stewart, Ian. Schaeffer, G. David.: Singularities and Groups in Bifurcation Theory (*Volume II*). Springer-Verlag, New York, 1988.