Landesman-Lazer condition for impulses and external forces in first and second order problems

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We consider the first and the second order impulsive Dirichlet and periodic problems at resonance and formulate sufficient and in some special cases also necessary conditions for the existence of a solution. Topological degree arguments are used for semilinear problems and variational arguments are used for quasilinear ones. As an interpretation of our results, external forces serve as a control of impulses and vice versa. The talk is based on joint work with Martina Langerová.