

C O N T E N T S

1. <u>General concepts.</u>	
1.1. Regular and singular perturbations	1
1.2. Orders of magnitude.	9
1.3. Asymptotic approximations. Regular approximations in a subdomain.	13
1.4. Regular and local approximations	21
1.5. Expansion operators for regular and local approximations . .	30
1.6. Matching rules	34
2. <u>Elementary heuristic reasoning in singular perturbations.</u>	
2.1. The elementary method of construction.	43
2.2. Application to linear ordinary differential equations with constant coefficients.	51
2.3. Application to linear ordinary differential equations with non-constant coefficients.	64
2.4. Remarks on the turning-point problem	70
2.5. Linear elliptic problems without turning point	75
2.5.1. The ordinary boundary layer	79
2.5.2. The parabolic boundary layer.	83
2.5.3. The case of zeroth order unperturbed operator	86
2.6. On non-linear problems	90
3. <u>The structure of the approximations.</u>	
3.1. Failures of the elementary method.	97
3.2. Significant approximations	107
3.3. Significant degenerations.	114
3.4. Relation between significant degenerations and significant approximations	121
3.5. Application to problems of birth of boundary layers. . . .	127
3.6. The non-elementary terms and the construction of formal expansions by iteration.	135
<u>Bibliography.</u>	143