(1) 初始值的选择。其方法有三种：

一是根据以往的经验选定初始值；

二是用分段法求出初始值；

三是对于可线性化的非线性回归模型，通过线性变换，然后施行最小平方法求出初始值 [2]  。

(2)泰勒级数展开式。设非线性回归模型为

https://gss3.bdstatic.com/7Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D275/sign=8e0334c52d3fb80e08d166d003d32ffb/d009b3de9c82d158435561458c0a19d8bd3e426a.jpg

其中: r为待估计回归系数，误差项

https://gss2.bdstatic.com/-fo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D94/sign=37fb72fa6b09c93d03f202f39d3d6ce1/a08b87d6277f9e2ff9e425fc1330e924b999f375.jpg

。

设

https://gss0.bdstatic.com/-4o3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D170/sign=1d2671fa6b09c93d03f20af0af3cf8bb/d043ad4bd11373f05633546ba80f4bfbfbed0431.jpg

为待估回归系数

https://gss1.bdstatic.com/-vo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D134/sign=62b3dac339fae6cd08b4af623bb20f9e/8718367adab44aeddbeb8510bf1c8701a08bfb99.jpg

的初始值，将式(1)

https://gss1.bdstatic.com/-vo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D50/sign=c0485f1e8dcb39dbc5c06756d116707e/3c6d55fbb2fb431670ae418e2ca4462308f7d394.jpg

在g点附近作泰勒展开，并略去非线性回归模型的二阶及二阶以上的偏导数项，得

https://gss3.bdstatic.com/7Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D428/sign=7ec80491bf19ebc4c478779bba24cf79/4d086e061d950a7b05f1753006d162d9f3d3c979.jpg

将式(2)代人式(1)，则

https://gss3.bdstatic.com/-Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D359/sign=fc8400e04ea7d933bba8e276944ad194/f9198618367adab4b9da21b787d4b31c8701e438.jpg

移项，有

https://gss3.bdstatic.com/-Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D359/sign=60b2a6b33512b31bc36ccb2cbf193674/622762d0f703918fb3d3073e5d3d269758eec4c7.jpg

令

https://gss3.bdstatic.com/7Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D420/sign=9d00b6c54690f60300b09d450913b370/a1ec08fa513d26974e6c32a959fbb2fb4216d882.jpg

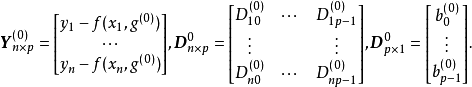
则

https://gss1.bdstatic.com/9vo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D291/sign=ef869d9cdd09b3deefbfe361fdbd6cd3/a5c27d1ed21b0ef4a21da2aad1c451da80cb3e48.jpg

用矩阵形式表示，上式则为

https://gss3.bdstatic.com/7Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D191/sign=5d4babcb47fbfbedd859327649f2f78e/6f061d950a7b02087c1005156ed9f2d3562cc86c.jpg

其中



(3)估计修正因子。用最小平方法对式(3)估计修正

https://gss1.bdstatic.com/9vo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D24/sign=4c54112d3501213fcb3349d855e72db9/38dbb6fd5266d016c860bbdc9b2bd40734fa35cc.jpg

则

https://gss0.bdstatic.com/-4o3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D274/sign=01e0112d3501213fcb3349db60e536f8/d009b3de9c82d158404f7c458c0a19d8bd3e4270.jpg

设

https://gss2.bdstatic.com/-fo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D25/sign=f329f03a9525bc312f5d069d5cdf30d0/f636afc379310a556dc5fb00bb4543a983261064.jpg

为第一个迭代值，则

https://gss3.bdstatic.com/-Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D111/sign=68a74b71c5ea15ce45eee40887013a25/9a504fc2d56285358e41f7d59cef76c6a6ef63a4.jpg

。

(4)精确度的检验。设残差平方和为

https://gss0.bdstatic.com/94o3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D211/sign=16c019339c52982201333ec2e6c87b3b/0dd7912397dda144fdd74946beb7d0a20df48663.jpg

其中，s内重夏迭代次数。对于给定的允许误差率K，当

https://gss3.bdstatic.com/-Po3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D165/sign=777f81e79bdda144de0968b487b6d009/95eef01f3a292df59b5689e1b0315c6035a873a8.jpg

时，否则，对式(4) 作下一次迭代。

(5)重复迭代。重复式(4)，当重复迭代s次吋，则有

修正因子

https://gss0.bdstatic.com/-4o3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D201/sign=29b71bbf0e087bf479ec50e9c3d2575e/d8f9d72a6059252de00839f0389b033b5bb5b922.jpg

，第(s+1)次迭代值

https://gss1.bdstatic.com/9vo3dSag_xI4khGkpoWK1HF6hhy/baike/s%3D121/sign=886386ce3c4e251fe6f7e0fa9687c9c2/e7cd7b899e510fb3c6735363d533c895d0430cdf.jpg