虽然作者在 `gsolve.m` 文件中填充A矩阵用了$N \times P + 254 + 1$，但是在原论文中，作者解释了公式(3)，也说明了用$N \times P + 256 + 2$的原因，需要用欧拉公式$g''(z) = g(z-1) - 2g(z) + g(z+1)$进行平滑。论文中的解释如下：

We wish to recover the function g and the irradiances E_i that best satisfy the set of equations arising from Equation 2 in a least-squared error sense. We note that recovering g only requires recovering the *finite* number of values that $g(z)$ can take since the domain of Z, pixel brightness values, is finite. Letting Z_{min} and Z_{max} be the least and greatest pixel values (integers), N be the number of pixel locations and P be the number of photographs, we formulate the problem as one of finding the $(Z_{max} - Z_{min} + 1)$ values of $g(Z)$ and the N values of $\ln E_i$ that minimize the following quadratic objective function:

$$\mathcal{O} = \sum_{i=1}^{N} \sum_{j=1}^{P} \left[g(Z_{ij}) - \ln E_i - \ln \Delta t_j\right]^2 + \lambda \sum_{z=Z_{min}+1}^{Z_{max}-1} g''(z)^2 \tag{3}$$

The first term ensures that the solution satisfies the set of equations arising from Equation 2 in a least squares sense. The second term is a smoothness term on the sum of squared values of the second derivative of g to ensure that the function g is smooth; in this discrete setting we use $g''(z) = g(z-1) - 2g(z) + g(z+1)$. This smoothness term is essential to the formulation in that it provides coupling between the values $g(z)$ in the minimization. The scalar λ weights the smoothness term relative to the data fitting term, and should be chosen appropriately for the amount of noise expected in the Z_{ij} measurements.

而 `gsolve.m` 文件中也实现了这个部分，k从1循环到$n-2$即$k \in [1, 254]$：

```
%% Include the smoothness equations
for i=1:n-2
    A(k,i)=l*w(i+1); A(k,i+1)=-2*l*w(i+1); A(k,i+2)=l*w(i+1);
    k=k+1;
end
```