Sensitivity Analysis

d由于模型所涉及人们对行走步态的取向，上行下行的偏好并不是固定的，任何参数值的变化都可能得出不同的Staircase Section Worn Pit Profile Line，相同参数值的多个求解结果也可能得到相同的Staircase Section Worn Pit Profile Line，由此，改变某一参数值，并求解模型，可以验证模型的灵敏度。

(对于上行下行的人数比例，在[0.3,0.8]的范围，以0.1为步长，作为上行人数占比，得出其值变化的求解结果)保持总人数不变，改变Kupstairs和Kdownstairs的比值模拟实际数据，得出不同参数下的凹坑形状。

In 图（）

从图中可以看出，随着上行人数占比的减少，靠近边缘的部分凹陷深度增加，远离边缘的部分凹坑深度减少，上下人数比例的改变对结果的影响较大，说明了模型对参数的敏感性较高，因此我们对上人数的拟合是可行且准确的。

**Due to the orientation of a person's stance during walking, which is taken into account by the model, the preferences for going up or down are not fixed. Any change in parameters may lead to a different profile of the worn pit in the staircase section.** Consequently, by changing a certain parameter and solving the model, the sensitivity of the model can be verified.

Maintaining the total number of people unchanged, by changing the ratio of Kupstairs to Kdownstairs and simulating, the shapes of the depressions under different parameters can be obtained（Fig ）.

As can be seen from the Fig（）with the decrease of the proportion of people walking up stairs, the depth of the depression near the edge increases, while the depth of the depression in the area far from the edge decreases. The change in the ratio of the number has a significant impact on the result, indicating that the model is highly sensitive. Therefore, the fitting of K is feasible and accurate.