

Recently, I designed this model for the Chinese National Championship rule. It is really challenging because it uses the size limitation of F1M (460mm max wingspan, 3grams min model weight without motor), whereas the 1/5 rubber weight of 0.3grams. Many fliers in China can fly their model under this rule over a duration of 7:30.

最近我在设计符合国内室内橡筋项目的飞机。和国际级 F1M 相同的重量和尺寸限制，但是橡筋的重量只有五分之一，非常有挑战性。因为少的这 1.2 克的重量，所以国内规则的飞机有更低的翼载荷和最低速度，所以平均螺距可以更低，因此橡筋可以使用更低的线密度，储存更多的圈数。很多国内的赛队可以达到七分半的飞行时间。

It is completely different from F1M (even though they have the same size). Less motor weight means lighter take-off weight, slower speed required, and lower avg. pitch and lower linear density of motor, thus more turns. Plus, CG position is forward due to the less motor weight so we cannot just copy the design of the F1Ms.

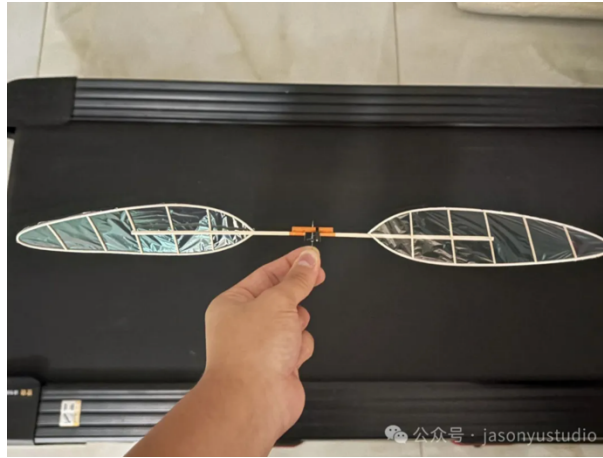


Most of the Chinese fliers use carbon fiber as the main material and use balsa sheets to build propellers. I assume this is because most of them are not familiar with balsa construction. My Black Bauhinia uses full balsa, no fiber materials; this is to encourage more fliers who do not have boron or carbon fiber materials to start building with basic materials and enter national championships.

大部分国内赛队使用的是以碳纤维为主要材料的飞机，这样做的原因可能是因为他们不熟悉轻木工艺。我的黑色紫荆花使用的是全轻木工艺，没有纤维材料的加强，这样做的主要原因是为了让更多初学者或者那些不能够获取到这些纤维材料的爱好者也能做出不错的飞机。重量限制较低，不需要纤维的增强也能有很好的强度。

I think the 0.85grams propeller (others' design in China) is way too heavy, so in my design, I use buildup propellers to keep the weight down to avoid additional energy loss. I use Treger VP for F1M and Treger pitch distribution.

据我所知，国内赛队使用的螺旋桨重量都太大，这导致会浪费过多能量。如果把螺旋桨重量减轻，效率提到，成绩还能提升一大截。我用的是 Ivan Treger 的变矩器和 Ivan Treger 的螺旋桨模具。



由于橡筋更短，因此机身杆也更短。而我又想用延长钩，所以我把机身杆设计的很短。这样的话，为了保证强度，我可以使用 1mm 厚的轻木，不会超重，强度也有保障。在国内，大部分市面上售卖的轻木都是 A grain 的轻木，而最适合作为机身材料的 C grain 轻木基本买不到。事实上 1mm 厚的 A grain 强度也很好。

Because the motor is shorter, so in my design, the motor stick is shorter too because I don't want to use a spacer. I use A grain 1 mm-thick sheet for motor stick because A grain wood is more available in China than C. I tested it, and it is pretty strong.

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