ELASTIC LAUNCH GLIDER

1. **DESCRIPTION:** The object of this event is to design, build and test two elastic-launched gliders designed for the highest time aloft. This event challenges students to build and test gliders that must be launched at floor level, ascend to a high point and then transition into a slow descending glide pattern.
   A TEAM OF UP TO: 2 **APPROX. TIME:** 6 MINS **EYE PROTECTION**: #5 **IMPOUND:** NO

2. **EVENT PARAMETERS:**
   a. Teams bring up to 2 gliders and flight log(s). Teams may bring any tools.
   b. Competitors must wear eye protection rated ANSI Z87+ while in the cordoned area of the competition. Teams without proper eye protection must be immediately informed and given a chance to obtain eye protection if time allows, otherwise they will not be allowed to compete and are scored as a no-show.
   c. The Event Supervisor must provide all measurement tools and timing devices.

3. **CONSTRUCTION PARAMETERS:**
   a. Each glider may be constructed from published plan(s), commercial kits and/or student designs.
   b. The functional components of the glider (fuselage, tail assembly and wings) must be constructed only from wood, paper, plastic film, carbon fiber, and glue. Ballast may be any malleable substance except for metal. The functional components may be attached to each other using tape, thread or glue. Kits must not contain any pre-glued joints or pre-covered surfaces.
   c. The total mass of the glider throughout the flight must be less than 15.0 grams.
   d. Each glider must be labeled so that the event supervisor can easily identify to which team it belongs.
   e. Fuselage maximum length is 30.0 cm long. Wingspan may not exceed 30.0 cm. The nose of the fuselage must blunt, with a radius greater than a dime.
   f. The launch handle (including the attachments for the elastic/rubber loop, but not the rubber loop itself) must not exceed 15.0 cm measured along its longest dimension.
      i. The handle must be made using a non-balsa hardwood dowel.
      ii. The handle may have padding or contoured grips for flier's comfort.
      iii. There is no limit to the length or width of the elastic/rubber loop.
      iv. The elastic/rubber loop must not separate from the launch handle during launches.

4. **THE COMPETITION:**
   a. The event must be held indoors. Tournament officials must announce the room dimensions (approximate length, width and ceiling height) in advance of the competition. Tournament officials and the Event Supervisor are urged to minimize the effects of environmental factors such as air currents (e.g. doors, fans).
   b. Once competitors enter the cordoned off competition area to trim, practice or compete, they must wear goggles and not receive outside assistance, materials, or communication. Teams violating this rule will be ranked below all other teams. There must be a separate area designated for spectators.
   c. Each team must present a flight log of recorded data during inspection. Data must include at least 4 parameters (3 required and at least 1 additional) for at least 10 test flights prior to the competition. The required parameters are: 1) estimated/recorded peak flight height after launch, 2) approximate length of elastic launch loop (relaxed), and 3) Flight Time. The team must choose an additional parameter beyond those required (e.g. orbit diameter, cross section of elastic launch loop, temperature, humidity, etc.)
   d. At the Supervisor's discretion, test flights may occur throughout the contest but will yield to any official flight. No test flights will occur in the last half-hour of the event.
   e. Multiple gliders may fly at once according to Supervisor's direction.
   f. A self-check inspection station may be made available to competitors for checking their glider and launch handle dimensions prior to being checked by the officials.
   g. Team Members must present their event materials (glider, catapult and log) for inspection immediately prior to a team's 3 official flights. Event Officials are strongly urged to return flight logs after inspection. Timers will follow teams as they prepare and launch their gliders.

h. Teams may make up to a total of 3 official flights using 1 or 2 gliders or launch handles.
i. Teams will be given a 6-minute "Flight Period", starting when their first flight after check-in (trim or official) begins. Any flight beginning within the 6-minute period will be permitted to fly to completion. Competitors may make any adjustments/repairs/trim flights and may switch gliders or catapults during their 6-minute Flight Period. Teams must declare before any launches during their Flight Period whether it is an official flight or trim flight. If teams do not indicate the flight type before the launch, it must be considered official. Teams must not be given extra time to recover or repair their gliders.
j. The team may select any previously and currently approved glider or catapult for each official flight.
k. The timing official must measure and record the "Time Aloft" in hundredths of a second for each flight. Time Aloft for each flight starts when the glider leaves the competitor's hand and stops when any part of the glider touches the floor or stops moving due to an obstruction (such as a glider landing on a girder, or basketball hoop).
l. Event supervisors are strongly encouraged to utilize 3 independent timers on all flights. The middle value of the 3 timers will be the officially recorded time.
m. If requested by an official, launches must only be made when competitors rotate 360° in place before any launch (to avoid floor level obstructions) and each glider is aimed above level and above the highest point of any surrounding bleachers.
n. The Event Supervisor may permit other official flights during the flight of another team's glider. Timers are allowed to delay a launch to avoid a possible obstruction.
o. Competitors must not steer their gliders during the flight. In the unlikely event of a collision with another glider, a team may elect a re-flight. The decision to re-fly may be made after the glider lands. The eight-minute period does not apply to such a flight.

5. **SCORING**: The base score is the sum of the team's two longest flight times. Ties will be broken by the longest non-scored flight time.
   a. Teams with incomplete flight logs must have 10% of their flight time deducted from each flight.
   b. Teams without flight logs must have 30% of their flight time deducted from each flight.
   c. Teams with rule violations under **"Construction" or** "**The Competition**" that do not have a penalty must be ranked after all teams that do not violate those rules.