

# Measuring system using laser beams and helium bubbles helps top skaters go for gold

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Credit: Delft University of Technology

TU Delft, NOC\*NSF, KNSB and Innovation Lab Thialf have been using the "Ring of Fire" measuring system to analyze top Dutch speed skaters. The measuring system was used last week in Heerenveen to measure and

visualize the air resistance around a moving skater.

The Ring of Fire is a tunnel containing thousands of bubbles filled with helium through which the skaters skate. Lighting up these bubbles with a laser and taking photographs really quickly with a [high-speed camera](#) enables us to create a precise image of the airflow around the moving skaters. Wouter Terra, a researcher at TU Delft and NOC\*NSF, explains: "The Ring of Fire is unique because it is the only measuring system in the world that can determine the exact [air resistance](#) of a moving skater. Up to now it was only possible to measure the air resistance in a [wind tunnel](#) in which the skater is standing still."

KNSB national coach Jan Coopmans: "Air resistance is the greatest obstacle that skaters have to overcome. The less the air resistance, the faster they go. This state-of-the-art measuring system helps in the quest to reduce air resistance and thus increase speed."

## **Arm behind back or swinging free**

Sander van Ginkel, embedded scientist at the KNSB, explains the importance of this measuring method: "Up to now, we could only visualize air resistance. Now we are able to measure the exact air resistance of various postures during skating. This enables us to make a well-founded decision based on statistics rather than gut feeling. For example, we can look at the difference between skating with your arm behind your back or with the arm swinging free."

Provided by Delft University of Technology

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