Titolo (provvisorio): Equilibrium shape of the aqueous humor-vitreous substitute interface in eyes with staphyloma

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Motivazione e campo di applicazione
A common surgical procedure to treat retinal tears or detachments is vitrectomy. The vitreous body is removed and replaced with a tamponade fluid, typically either a gas or a silicone oil. The filling of the vitreous chamber is never complete and an interface forms between the tamponade fluid and water.

Obiettivi generali e principali attività
Aim of the work is to develop a numerical model capable of predicting the shape of the interface between the tamponade fluid and the aqueous humour. This is a clinically relevant information, since the surgeon needs to know the amount of retinal surface effectively tamponated by the fluid. In particular we will focus on eyes with staphyloma, which is a deformation of the scleral surface typically located at the posterior pole of the eye.

Obiettivi di apprendimento (strumenti tecnici e analitici, metodologie sperimentali)
The student will deepen her/his knowledge in the fluid mechanics of interfaces and will learn how to perform numerical simulations of flows with interfaces, using the finite volume method.

Luogo/i in cui si svolgerà il lavoro: DICCA

Informazioni aggiuntive
Abilità e capacità richieste: Basic knowledge of fluid mechanics and numerical methods.

Numero massimo di studenti: 1