

# Aspects of 6D theories: geometric engineering and holography

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## Abstract

6D theories are in between the most elusive and interesting supersymmetric systems whose existence is predicted by string theory. The main aim of the first part of these lectures is to convince the audience that this is the case, and to review their geometric engineering in M-theory and F-theory, with emphasis on the recent results obtained by means of the latter. In the second part of the lectures, we will focus on the brane constructions in type IIA, involving NS5, D6, and D8 branes. We will then link holographically these brane configurations to the  $AdS_7$  gravity dual solutions of massive IIA supergravity.

## References

It is very hard to give a good and complete set of references about 6D theories: the community of string theorist has been working about them since their discovery in the 90s (see Witten '95, Strominger '95) and there are hundreds of papers about them. Several aspects of the 6D (2,0) theories are discussed in the Felix Klein Lectures available from Greg Moore's homepage. To get a feeling of what is this all about, for the case of 6D (2,0) superconformal field theories we recommend to give a look at the video lectures of the Banff 2015 workshop ([here](#)) while we recommend looking at the videos of the talks by [Tomasiello](#) and [Vafa](#) at Strings 2014 as well as [Heckman](#), [Intriligator](#) and [Vafa](#) at Strings 2015 as far as 6D (1,0) are concerned.

In between the many authors which have been working on aspects of 6D models we list here a few (and apologize to all of those which are not mentioned in advance): Alday, Aharony, Aganagic, Aspinwall, Beem, Benini, Benvenuti, Bobev, Blum, Bonelli, Brunner, Chacaltana, Cordova, Distler, Dimofte, Douglas, Dumitrescu, Ferrara, Freed, Gaiotto, Ganor, Green, Gukov, Iqbal, Hanany, Harvey, Haghighat, Heckman, Horava, Intriligator, Jafferis, Kapustin, Kim<sup>3</sup>, Kozcaz, Lee<sup>2</sup>, Lemos, Lockhart, Losev, Maldacena, Martinec, Minasian, Minwalla, Moore, Morrison, Nekrasov, Neitzke, Park, Polchinski, Rastelli, Rudelius, Teschner, Sagnotti, Seiberg, Schwarz, Shatashvili, Strominger, Tachikawa, Taylor, Tanzini, Tomasiello, Vafa, Van Rees, Witten, Xie, Yamazaki, Yi, Yin, Zaffaroni, Zafir.