

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 13G

**Under the Securities Exchange Act of 1934
(Amendment No. 2)***

AXCELIS TECHNOLOGIES INC

(Name of Issuer)

Common Stock

(Title of Class of Securities)

054540109

(CUSIP Number)

December 31, 2008

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

Rule 13d-1(c)

Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. 054540109

1. Names of Reporting Persons.

I.R.S. Identification Nos. of above persons (entities only).

Dimensional Fund Advisors LP (Tax ID: 30-0447847)

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Citizenship or Place of Organization

Delaware Limited Partnership

5. Sole Voting Power

6774472 **see Note 1**

Number of
Shares

6. Shared Voting Power

Beneficially
Owned by

0

Each
Reporting

7. Sole Dispositive Power

Person

6912221 **see Note 1**

With

8. Shared Dispositive Power

0

9. Aggregate Amount Beneficially Owned by Each Reporting Person

6912221 **see Note 1**

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

N/A

11. Percent of Class Represented by Amount in Row (9)

6.71%

12. Type of Reporting Person (See Instructions)

IA

Item 1.

- (a) Name of Issuer
AXCELIS TECHNOLOGIES INC
- (b) Address of Issuer's Principal Executive Offices
108 Cherry Hill Dr, Beverly, MA 01915-1068

Item 2.

- (a) Name of Person Filing
Dimensional Fund Advisors LP
- (b) Address of Principal Business Office or, if none, Residence
Palisades West, Building One, 6300 Bee Cave Road, Austin, Texas, 78746
- (c) Citizenship
Delaware Limited Partnership
- (d) Title of Class of Securities
Common Stock
- (e) CUSIP Number
054540109

Item 3. If this statement is filed pursuant to §§240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:

- (a) Broker or dealer registered under section 15 of the Act (15 U.S.C. 78o).
- (b) Bank as defined in section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c) Insurance company as defined in section 3(a)(19) of the Act (15 U.S.C. 78c).
- (d) Investment company registered under section 8 of the Investment Company Act of 1940 (15 U.S.C 80a-8).
- (e) An investment adviser in accordance with §240.13d-1(b)(1)(ii)(E);
- (f) An employee benefit plan or endowment fund in accordance with §240.13d-1(b)(1)(ii)(F);
- (g) A parent holding company or control person in accordance with § 240.13d-1(b)(1)(ii)(G);
- (h) A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i) A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j) Group, in accordance with §240.13d-1(b)(1)(ii)(J).

Item 4. Ownership.

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

- (a) Amount beneficially owned:
6912221 **see Note 1**
- (b) Percent of class:
6.71%

- (c) Number of shares as to which the person has:
- (i) Sole power to vote or to direct the vote:
6774472 **see Note 1**
 - (ii) Shared power to vote or to direct the vote:
0
 - (iii) Sole power to dispose or to direct the disposition of:
6912221 **see Note 1**
 - (iv) Shared power to dispose or to direct the disposition of:
0

** Note 1 ** Dimensional Fund Advisors LP (“Dimensional”), an investment advisor registered under Section 203 of the Investment Advisors Act of 1940, furnishes investment advice to four investment companies registered under the Investment Company Act of 1940, and serves as investment manager to certain other commingled group trusts and separate accounts. These investment companies, trusts and accounts are the “Funds.” In its role as investment advisor or manager, Dimensional possesses investment and/or voting power over the securities of the Issuer described in this schedule that are owned by the Funds, and may be deemed to be the beneficial owner of the shares of the Issuer held by the Funds. However, all securities reported in this schedule are owned by the Funds. Dimensional disclaims beneficial ownership of such securities. In addition, the filing of this Schedule 13G shall not be construed as an admission that the reporting person or any of its affiliates is the beneficial owner of any securities covered by this Schedule 13G for any other purposes than Section 13(d) of the Securities Exchange Act of 1934.

Item 5. Ownership of Five Percent or Less of a Class

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following [].

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

The Funds described in Note 1 above have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the securities held in their respective accounts. To the knowledge of Dimensional, the interest of any one such Fund does not exceed 5% of the class of securities. Dimensional disclaims beneficial ownership of all such securities.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company or Control Person.

N/A

Item 8. Identification and Classification of Members of the Group

N/A

Item 9. Notice of Dissolution of Group

N/A

Item 10. Certification

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

DIMENSIONAL FUND ADVISORS LP

February 9, 2009

Date

By: Dimensional Holdings Inc., General Partner

/s/ Christopher Crossan

Signature

Global Chief Compliance Officer

Title